ORDER NO. VRD-8211-334

Service Manual

Supplementary

Video Cassette Recorder

Panasonic / National VHS

NV-8200

Video Cassette Player

NV-8170

NV-8200

NV-8170

Subject: Improvement of Picture Quality

Panasonic / National

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

Service Manual

Video Cassette Recorder

Panasonic VHS

NV-8200-E -B -A

Electrical Adjustment Procedures

Mechanical Adjustment Procedures

SPECIFICATIONS

Power Source:	110/127/220/240V AC, 50Hz/60Hz
Power Consumption:	Approx. 45 watts
Television System:	CCIR: 625 lines, 50 fields PAL colour signal
Video Recording System:	2 rotary heads, helical scanning system Luminance: FM azimuth recording Colour signal: converted subcarrier phase shift recording
Audio Track:	2 tracks
Tape Format:	Tape width 12.7mm, high density tape
Tape Speed:	23.39mm/s (Normal)
Record/Playback Time:	180 min. with NV-E180
FF/REW Time:	Less than 4.5 min. with NV-E180
Heads:	Video: 2 rotary heads Audio/Control: 1 stationary head Erase: 1 full track erase 1 audio track erase for audio dubbing
Input Level:	Video: TV Monitor connector (8 pins) 1.0Vp-p, 75Ω unbalanced VIDEO IN connector (BNC) 1.0Vp-p, 75Ω unbalanced Audio: TV Monitor connector (8 pins) −20dB, 100kΩ unbalanced MIC IN jack × 2 −70dB, 600Ω unbalanced LINE IN jack (RCA) × 2 −20dB, 100kΩ unbalanced
Output Level:	Video: TV Monitor connector (8 pins) 1.0Vp-p, 75Ω unbalanced VIDEO OUT connector (BNC) 1.0Vp-p, 75Ω unbalanced Audio: TV Monitor connector (8 pins) 0dB, 5kΩ unbalanced LINE OUT jack (RCA) × 2 −6dB, 600Ω unbalanced HEADPHONE jack −32dB, 8Ω unbalanced
Video Horizontal Resolution: (on monoscope test pattern)	Colour: more than 240 lines B/W: more than 300 lines
Audio Frequency Response:	80 ~ 10,000Hz
Signal-to-Noise Ratio:	Video: better than 43dB Audio: better than 45dB
Operating Temperature:	5°C ~ 40°C
Weight:	15.5kg
Dimensions:	382(W) × 382(D) × 156(H)mm
Accessories Supplied:	1 pc. Video cassette tape, NV-E120 1 pc. 8 pin cable, VJA54S 1 pc. Dust cover, VYC0041 1 pc. Fan bag, VQF0523 1 pc. Protect cover, VYF0154
Optional Accessories:	Video cassette tape: NV-E180 Approx. 258m, 180 min. NV-E120 Approx. 174m, 120 min. NV-E60 Approx. 88m, 60 min. Carrying case, NV-H80-E Remote controller, NV-A810-E Approx. 3m Auto search controller, NV-A800-E Approx. 2m Interface adaptor, NV-A820-E VTR-Monitor connection cable

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

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P.O. Box 288, Central Osaka Japan

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MECHANICAL ADJUSTMENT PROCEDURES

Disassembly Method

1. DISASSEMBLY FLOW CHART

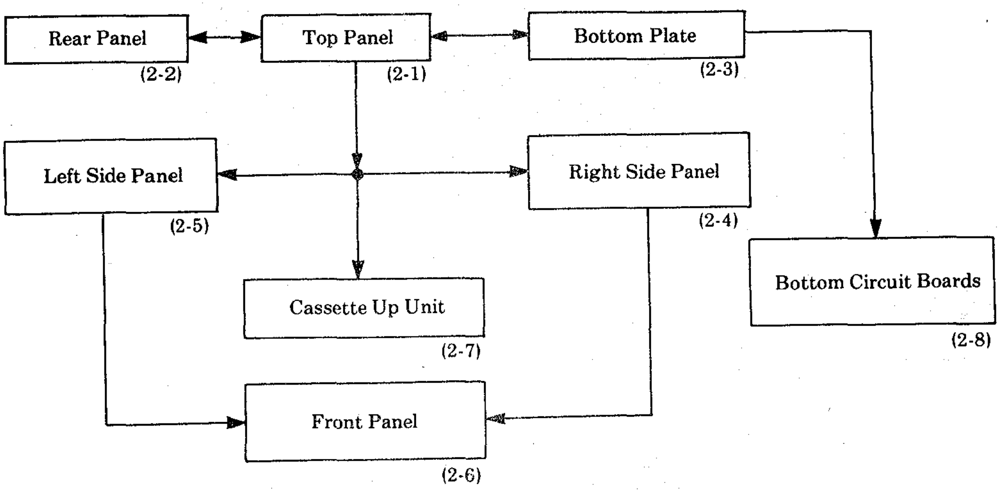
Rear Panel
(2-2)
Top Panel
(2-1)
Bottom Plate
(2-3)
Left Side Panel
(2-5)
Right Side Panel
(2-4)
Bottom Circuit Boards
(2-8)
Cassette Up Unit
(2-7)
Front Panel
(2-6)

Fig. 1

2. DETAILED DISASSEMBLY METHOD

2-1. Removal of the Top Panel

1. Unscrew the 2 screws (A) and Remove the Cassette Cover.
2. Unscrew the 2 screws (B) and Remove the Top Panel.

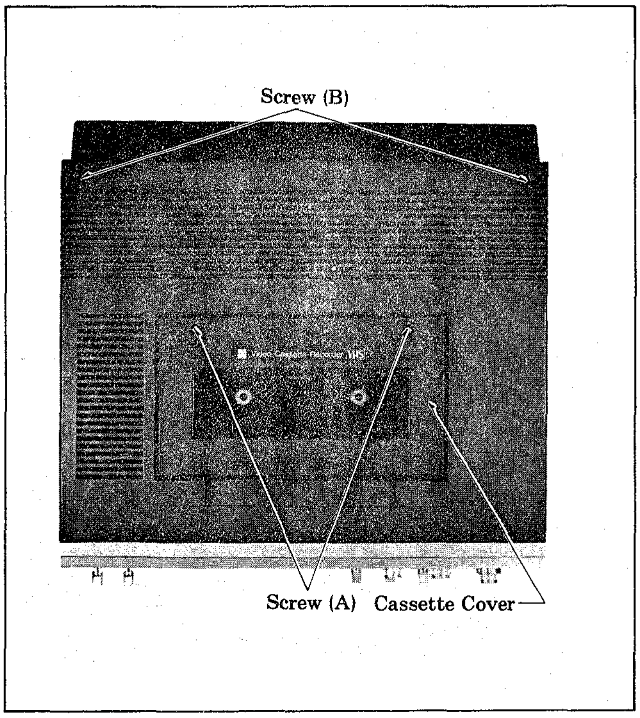
Screw (B)
Screw (A)
Cassette Cover

Fig. 2

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2-2. Removal of the Rear Panel

1. Unscrew the 5 screws (C) and remove the Rear Panel.

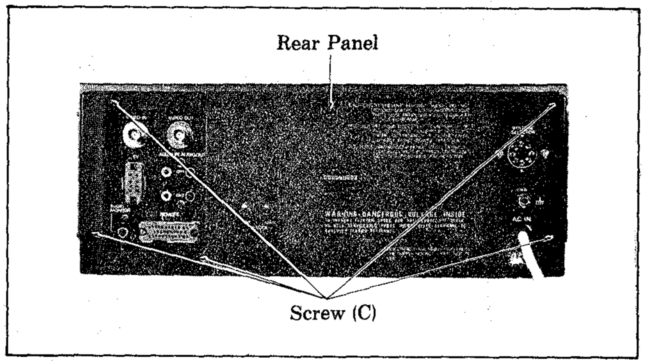
Rear Panel
Screw (C)

Fig. 3

2-3. Removal of the Bottom Plate

1. Unscrew the 4 screws (D) and remove the Botttom Plate.

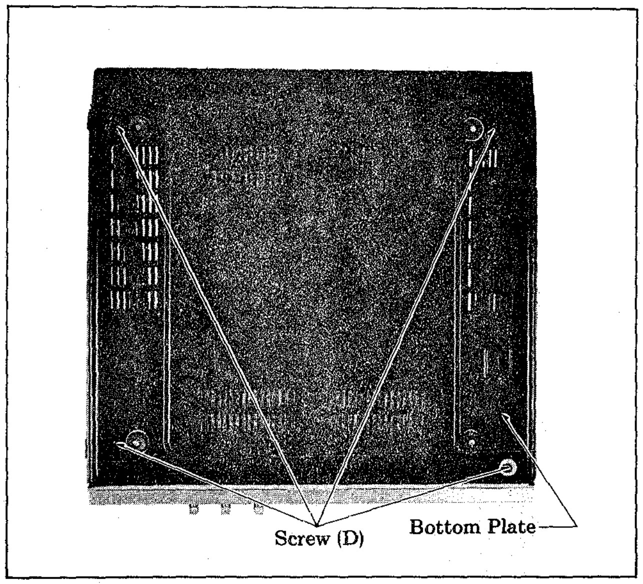
Screw (D)
Bottom Plate

Fig. 4

2-4. Removal of the Right Side Panel

1. Unscrew the 2 screws (E) and remove the Right Side Panel.

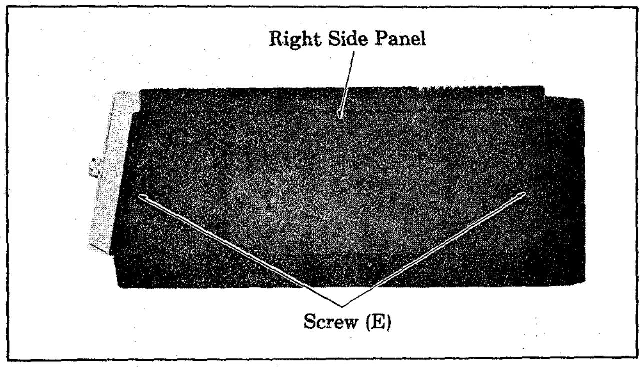
Right Side Panel
Screw (E)

Fig. 5

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2-5. Removal of the Left Side Panel

1. Unscrew the 2 screws (F) and remove the Left Side Panel.

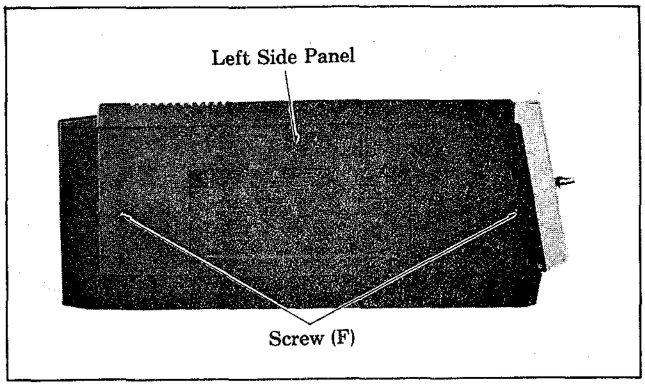
Left Side Panel
Screw (F)

Fig. 6

Be careful removing the Left Side Panel.
You can't remove the Left Side Panel before removing the Rear Panel.

2-6. Removal of the Front Panel

1. Unscrew the 2 screws (G) on top and unscrew the 2 screws (H) underneath.

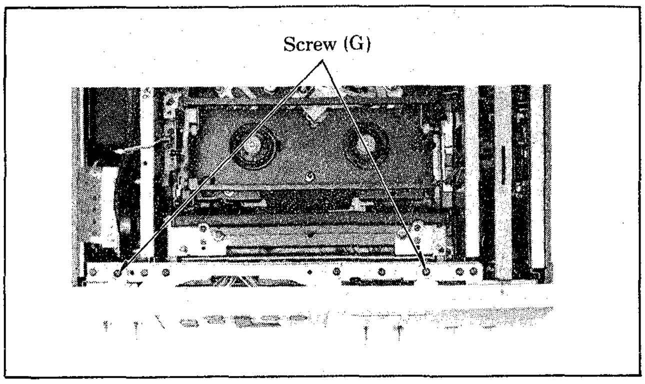

Fig. 7

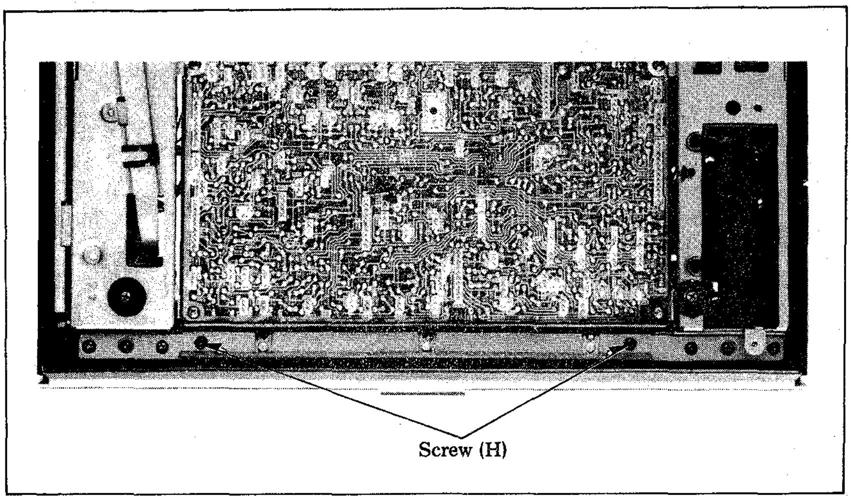

Fig. 8

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2. Remove the Audio Knob, Tracking Knob, Play Speed Knob, Input Knob, Tape Memory Knob, Timer Knob, Dolby NR Knob and Power Switch Knob.

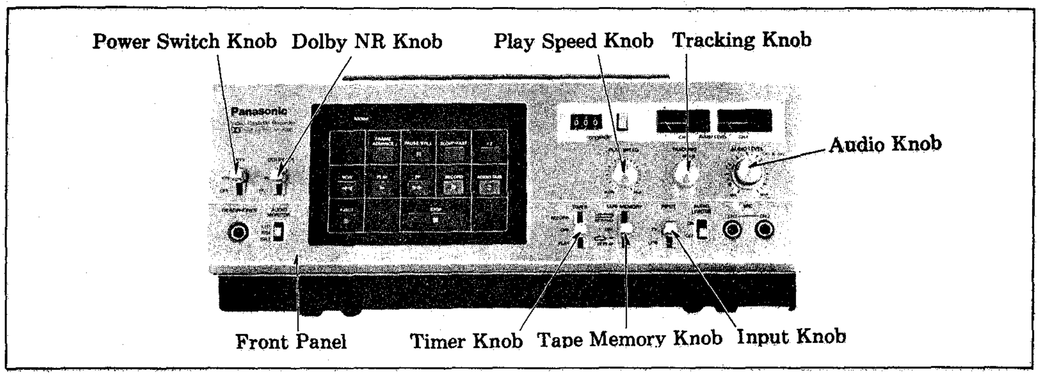
Power Switch Knob
Dolby NR Knob
Play Speed Knob
Tracking Knob
Audio Knob
Front Panel
Timer Knob
Tape Memory Knob
Input Knob

Fig. 9

3. Remove the Front Panel.

2-7. Removal of the Cassette Up Unit

1. Unscrew the 4 red screws (I) and remove the Cassette Up Unit.

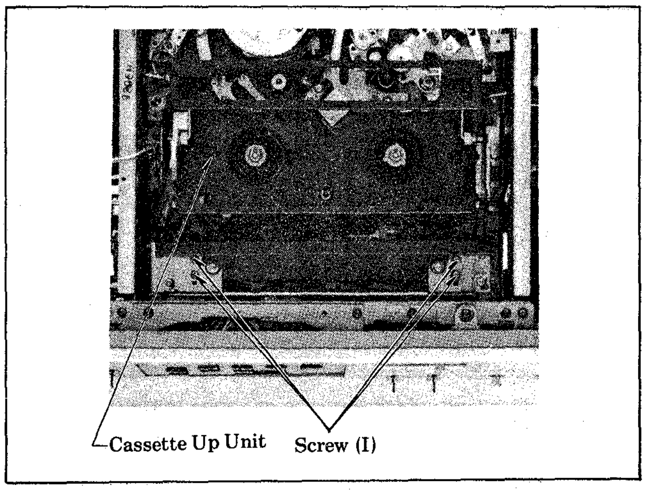
Cassette Up Unit
Screw (I)

Fig. 10

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2-8. Opening the Bottom Circuit Boards

Unscrew the 5 red screws (J) securing the circuit boards to the frames, for replacements or adjustments of the parts which are located under the chassis.

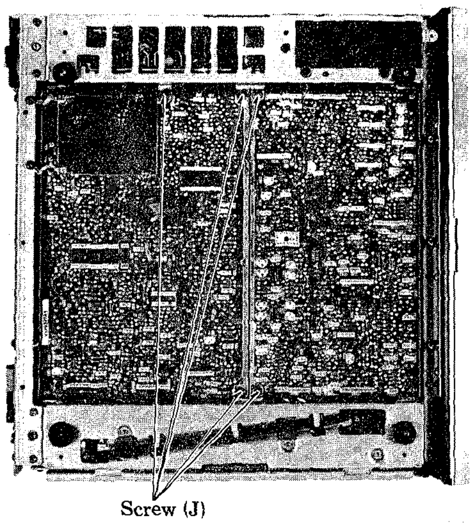

Fig. 11

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Mechanical Maintenance Procedures

1. Replacement of Video Disc

1. Remove the Top Panel.
   (Refer to section "DISASSEMBLY METHOD" Item 2-1).
2. Unscrew the 2 red screws (A) and remove the reinforcement angle.
3. Unscrew the screw (B) and remove the brush unit.
4. Unscrew the 2 screws (C) and remove the wire guide.
5. Unsolder the 4 lead wires of the video head from the head relay board and remove the Video Head Disc (Upper Cylinder).

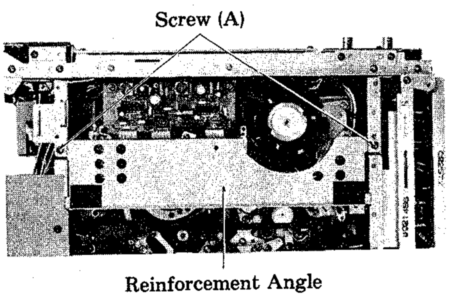

Fig. 12

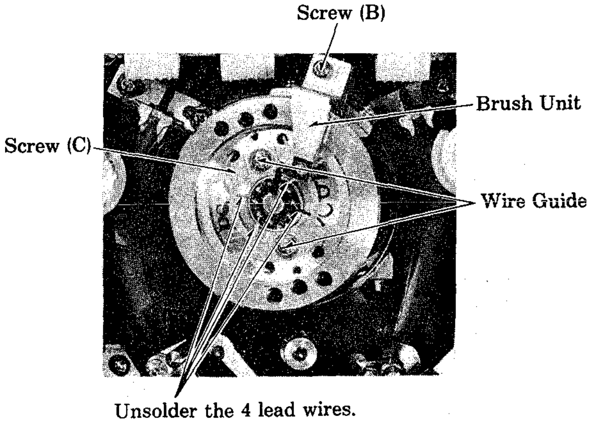

Fig. 13

6. Clean the flinge, bottom and rotative surface of the new Video Head Disc, with a soft cloth dampened with alcohol or freon liquid.
7. Place the new Video Head Disc on the head disc base so that the screw holes match.
8. Solder the 4 lead wires to the head relay board. Be sure to match the wire colors and tighten the 2 screws (C) with the wire guide.
9. Place the brush unit with screw (B).
10. Place the reinforcement Angle with screw (A).

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2. Replacement and Adjustment of DD Cylinder Unit

A. Replacement Procedure

1. Remove the Top Panel, and Rear Panel.
   (Refer to section "DISASSEMBLY METHOD" Item 2-1 and 2-2).
2. Unscrew the 2 red screws (A) and remove the reinforcement Angle.
3. Place the unit vertically so that the left side board is facing down.
4. Remove the Bottom Plate.
   (Refer to section "DISASSEMBLY METHOD" Item 2-3).
5. Unscrew the 3 red screws (B) and open the P.C.Board (VEP0389).

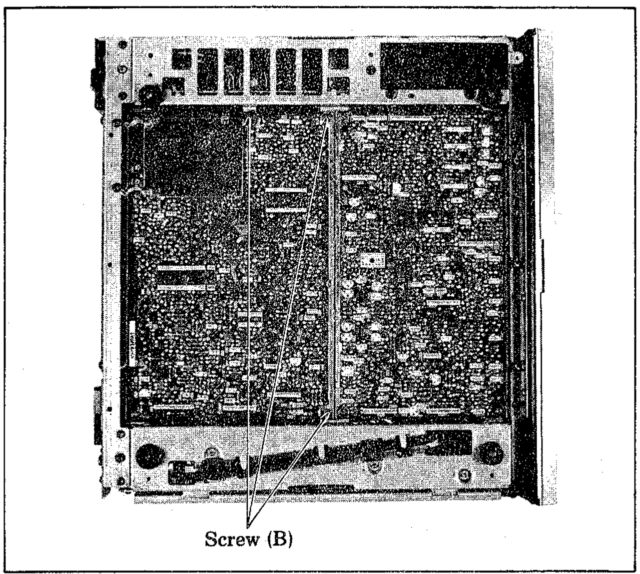

Fig. 14

6. Unscrew the 4 red screws (C) and open the P.C.Board (VEP0293).

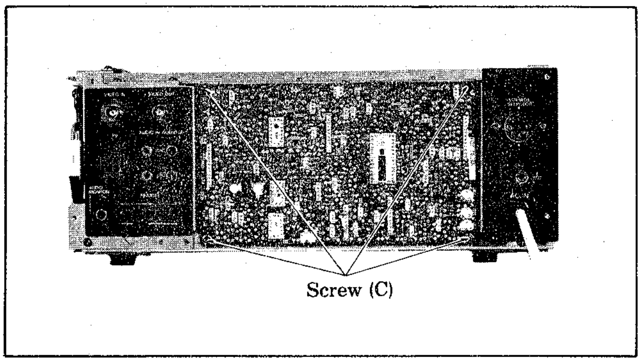

Fig. 15

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7. Unscrew the 3 screws (D) securing the DD cylinder unit.

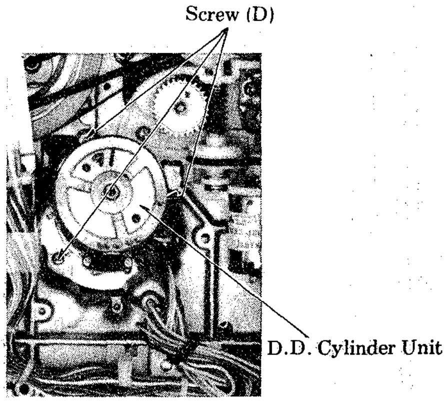

Fig. 16

8. Unscrew the 2 screws (E) and remove the Heater.

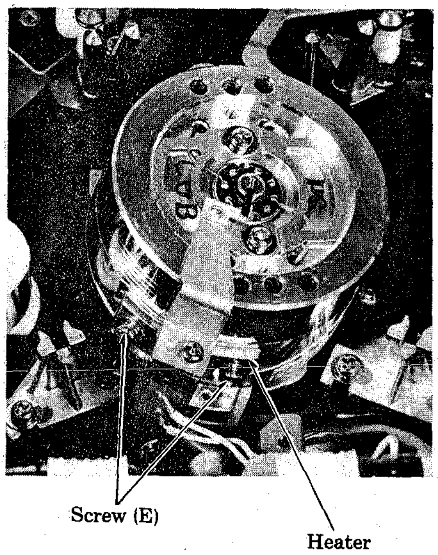

Fig. 17

9. Disconnect the connector P-51 on the Luminance P.C.Board(VEP0389) disconnect the connector P-24 on the Servo P.C.Board(VEPO 293).
10. Remove the DD Cylinder unit.
11. Clean the surface of the new DD cylinder unit with a soft cloth campened with alcohol or freon liquid.
12. Mount the new DD cylinder unit and reverse the above steps to complete the installation.

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B. Adjustment Procedure

When the DD cylinder unit is replaced, the tape interchangeability should be checked.
(Refer to section "TAPE INTERCHANGEABILITY ADJUSTMENT item 28).

3. REPLACEMENT OF THE CAPSTAN MOTOR

A. Replacement Prodecure

1. Remove the Top Panel, Bottom plate and open the Bottom P.C. Board (Refer to the section "DISASSEMBLY METHOD" Items 2-1, 2-3, and 2-8).
2. Unscrew the 2 screws and remove the reinforcement Angle. (See Fig.12)
3. Remove the Capstan Belt and Reel Belt from the Capstan Motor Pulley.
4. Remove the Inertia Roller Spring (A) and connector P605 on the VJB00171.
5. Unscrew the 3 screws (B) and remove the Capstan Motor from the chassis.
6. Install the new Capstan Motor and reverse the above steps to complete the installation.

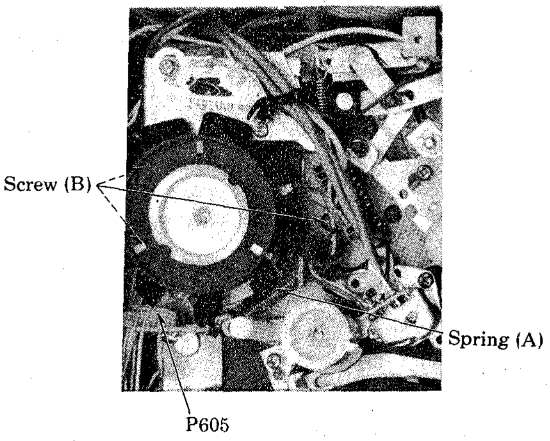

Fig. 18

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4. MEASUREMENT OF TAPE SPEED AND REPLACEMENT OF CAPSTAN BELT

* Equipment Required:
Frequency Counter
VHS Alignment Tape VFM8100H3D

* Specification : 600HZ, Deviation 1.5HZ

1. Remove the Rear Panel (Refer to section "DISASSEMBLY METHOD" Item 2-2).
2. Connect the frequency counter TP 7 and ground (VEP0293).
3. Playback the alignment tape and wait until the tape running has well stabilized.
4. Take the read of the frequency counter and make sure that it is 600HZ.
5. When the tape speed is out of the specification, replace the capstan belt.

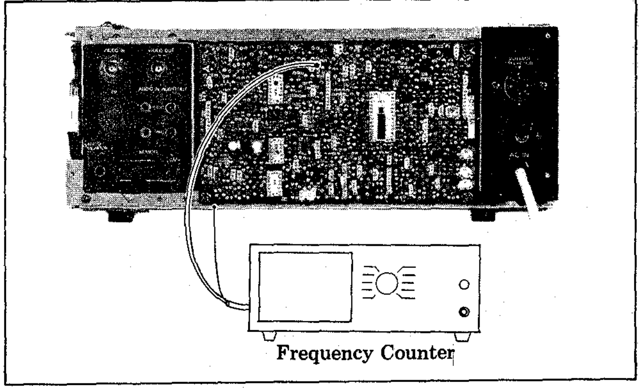


Fig. 19

B. Replacement Procedure

1. Remove the Bottom Plate and unscrew 5 red screws securing P.C.Board and open the P.C.Boards. (Refer to section "DISASSEMBLY METHOD" Items 2-3, 2-8).
2. Remove the thrust holder unit and remove the reel belt.
3. Then, change the capstan belt to obtain the correct speed. (VDV0094A, VDV0094B, VDV0094C).
   Note: Install the capstan belt so that the marked side is on the outside.

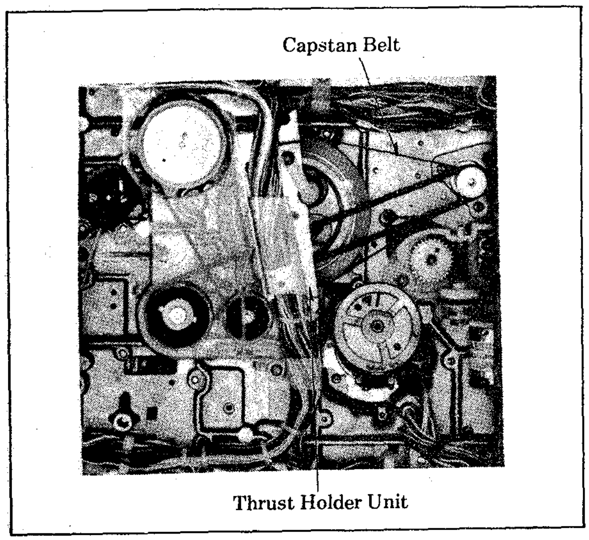


Fig. 20

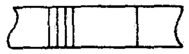
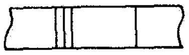
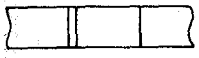
Part No.	Marking	Speed Range
VDV0094A		Slow ↑
VDV0094B		Center
VDV0094C		↓ Fast

Fig. 21

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5. REPLACEMENT AND FITTING ADJUSTMENT OF CASSETTE UP UNIT

A. Replacement Procedures
(Refer to section "DISASSEMBLY METHOD" Items 2-1, 2-7).

B. Adjustment Procedure

* Equipment Required
Cassette Holder Jig (VFK0179)

1. Install the Cassette Up HOlder
2. Set the 4 red screws (A) and screw them a few thrns only.

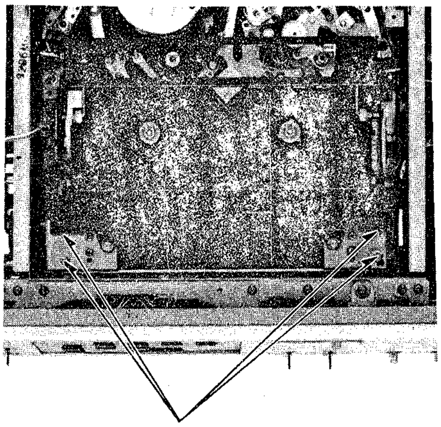

Fig. 22

3. Insert the cassette holder jig until it touches the stoppers of the cassette up unit.
4. while pressing the jig down until the cassette up unit latches, adjust the position so that it has smooth movement and correct position.
5. Tighten the 4 screws (A).
6. Press the Eject Button and make sure that it has a smooth ejection.
7. Press the cassette up unit down, and make sure that it has normal motion.
8. Repeat the above items 6 and 7 to re-confirm.

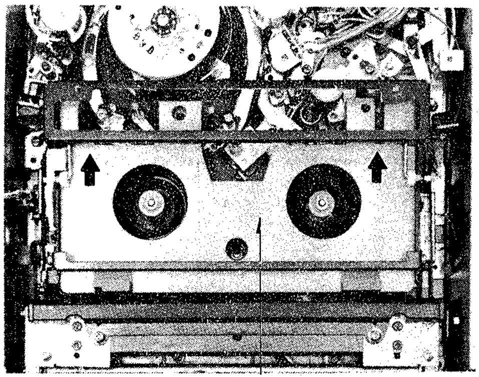

Fig. 23

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6. MEASUREMENT AND ADJUSTMENT OF THE BACK TENSION

* Specification : 25-30g
* Equipment Required
Back tension meter
VHS Cassette Tape
(beginning of NV-E120 or NV-E60 with Large hub)

A. Measurement Procedure

1. Remove the Top Panel. (Refer to section "DISASSEMBLY METHOD" item 2-1).
2. Remove the reinforcement Angle
3. Pull the supply Inertia Roller in the direction indicated by arrow and hold it with adhesive tape.

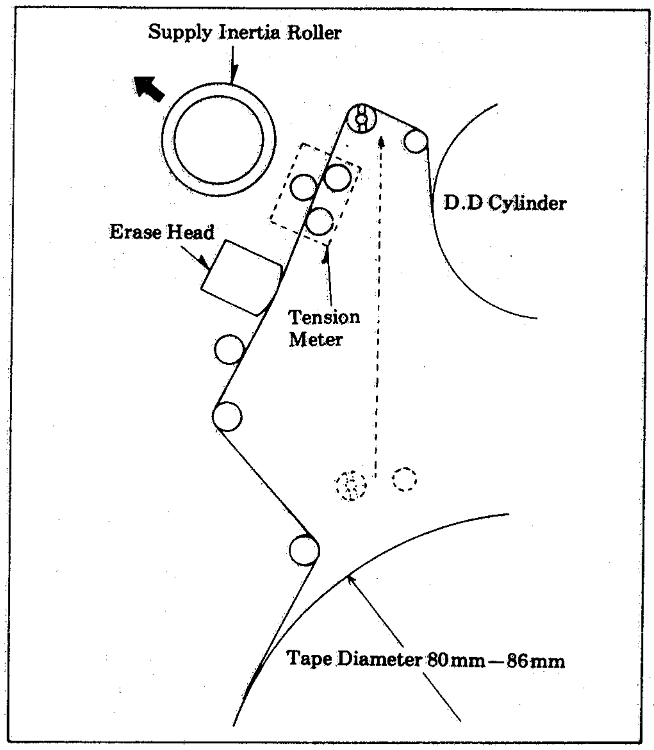

Fig. 24

4. Playback the cassette tape and wait until the tape running has stabilized (10-20 seconds).
5. Set tention meter in front of the supply Inertia Roller and take the read of the meter.

Note: When measuring, make sure that the three posts of the meter are all in good contact with the tape, but out of contact with the supply Inertia Roller.

B. Adjustment Procedure

* Equipment Required
Fine Adjustment screw driver (VFK0136)

1. Loosen the screw (A) and set the fine adjustment driver into the hole (B).

2. Move the Threading Spring Hook in either of the directions indicated by arrow.
3. Upon completion of adjustment, tighten screw (A) and remove the adhesive tape for holding inertia roller.

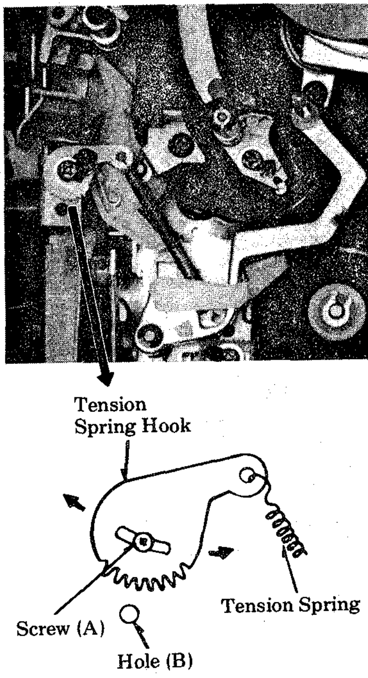
Tension
Spring Hook
Screw (A)
Hole (B)
Tension Spring

Fig. 25

7. MEASUREMENT/ADJUSTMENT OF BRAKING FORCE AND REPLACEMENT OF BRAKE UNIT A & B

* Specification:
Braking force A......(450-650g-cm)
B......(70-130g-cm)
C......(65-135g-cm)

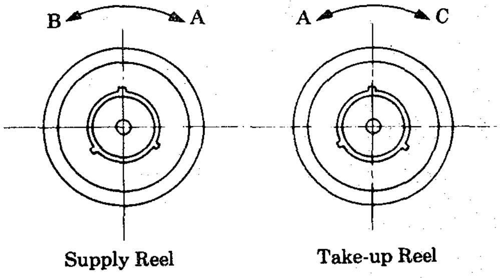
B
A
A
C
Supply Reel
Take-up Reel

Fig. 26

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A. Measurement Procedure

* Equipment Required:
Dial Torque Gauge (VFK0133)
Adaptor (VFK0134)

1. Remove the Top Panel and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Attach the adaptor to the torque gauge.
3. Set the torque gauge to the Reel Table in STOP mode.
4. Rotate the gauge slowly in the each directions and take the reading at the moment when the Reel Table begins slipping.

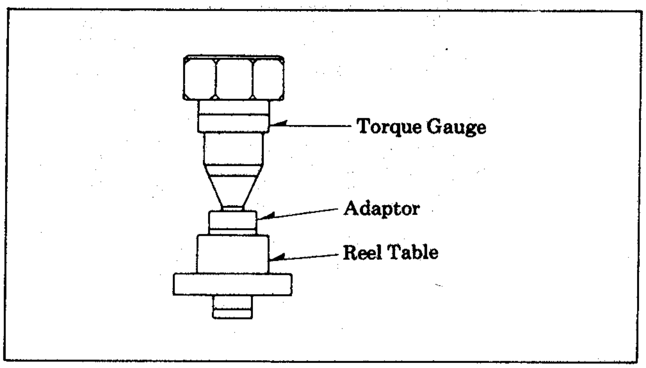

Fig. 27

B. Adjustment Procedure

1. For adjustment of braking force A, change the spring position, selecting the proper notch.
2. The braking forces B and C are only to be measured. (It is more important that the force A be correct).

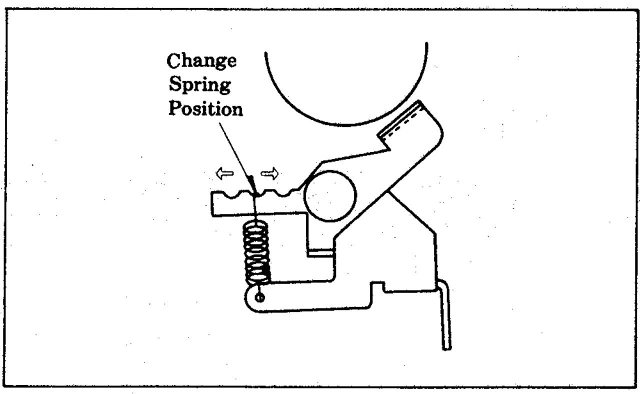

Fig. 28

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C. Replacement Procedure

* Equipment Required:
Retaining Ring Remover--4mm(VFK0145)
After adjustment, it is still out of specification, then replace the Brake Unit.

1. Remove the Top Panel, and the Cassette up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Remove the Brake Arm Springs.
3. Remove the Retaining Ring (S) and Brake Unit A or B which is needed.
4. Install a new Brake Unit and reverse the above steps to complete installation.

Note: When the Brake Unit is replaced, following adjustments should be checked. (Refer to section "FITTING ADJUSTMENT OF CASSETTE UP UNIT" for details).

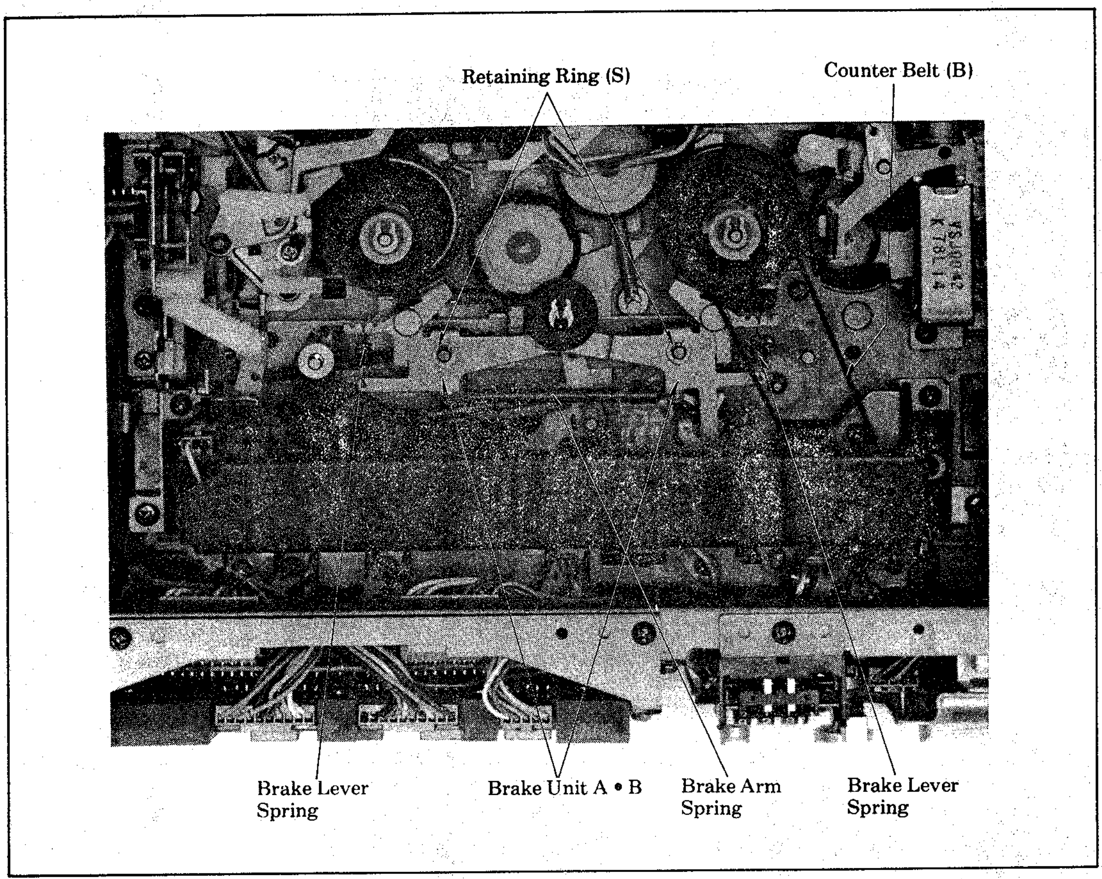
Retaining Ring (S)
Counter Belt (B)
Brake Lever Spring
Brake Unit A • B
Brake Arm Spring
Brake Lever Spring

Fig. 29

⑱ NV 8200

8. REPLACEMENT OF THE PRESSURE ROLLER UNIT

Replacement Procedure

1. Remove the Top Panel, Cassette Up Unit.
   (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Remove the reinforcement Angle.
   (See Fig.12)
3. Remove the Retaining Ring (A).
4. Remove the Spring (B).
5. Remove the Retaining Ring (C).
6. Remove the Pressure Roller Unit.
7. Install new Pressure Roller Unit and reverse the above steps to complete installation.

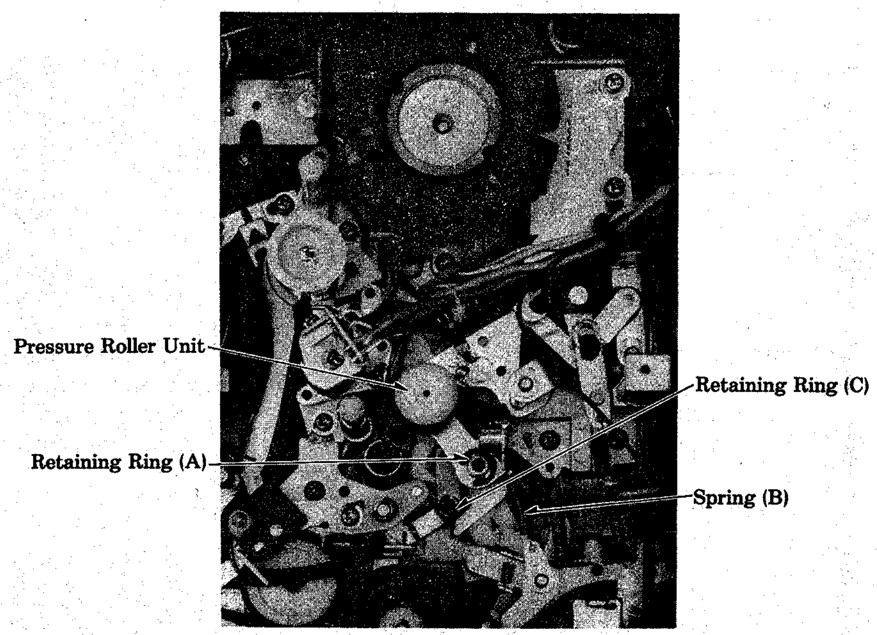
Pressure Roller Unit
Retaining Ring (C)
Retaining Ring (A)
Spring (B)

Fig. 30

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9. MEASUREMENT AND ADJUSTMENT OF THE PAUSE BRAKING FORCE

* Specification
Braking force A......(more than 450g-cm)

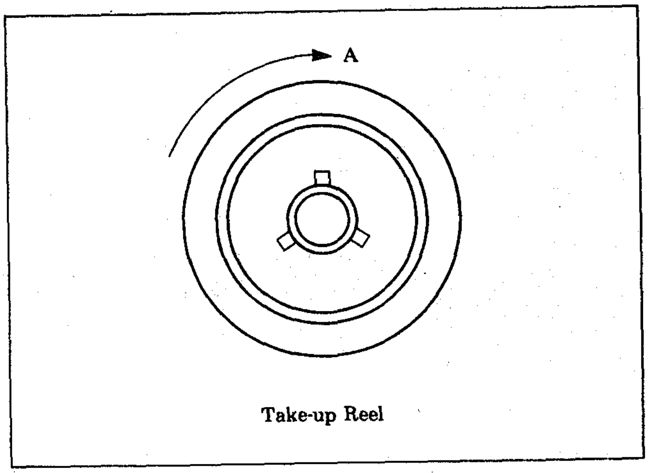

Fig. 31

A. Measurement Procedure

* Equipment Required:
Dial Torque Gauge (VFK0133)
Adaptor (VFk0134)

1. Remove the Top Panel and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Attach the adaptor to the torque gauge.
3. Turn power switch ON and push the Tape insertion detect Lever, then subloading operation is performed.
4. Blind the supply Photo Transistor(TR6302) with finger, and continue to push the Tape insertion detect lever, then push the play button for Loading.
5. During Loading, turn the Power Switch OFF.
6. Set the torque gauge to the Take-up Reel Table. (See Fig.27)
7. Push the Brake Lever B by finger and hold it on.
8. Rotate the gauge slowly in the A directions and take the reading at the moment when the Reel Table begins slipping.

B. Adjustment Procedure

1. For adjustment of braking force A, change the spring position, selecting the proper notch.

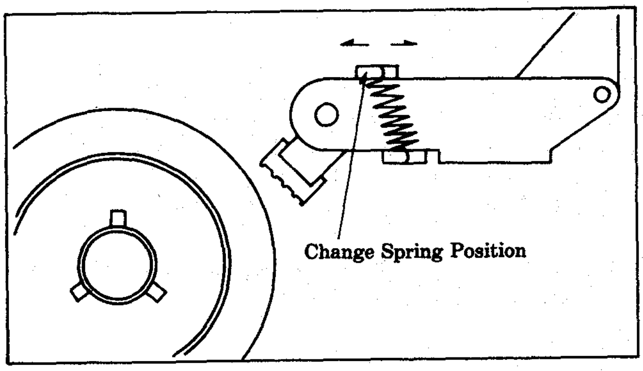

Fig. 32

(20) NV 8200

C. Replacement Procedure

* Equipment Required
Retaining Ring Remover--4mm(VFK0145)
After adjustment, it is still out of specification, then replace the Brake unit.

1. Remove the Top Panel and the Cassette Up Unit.
   (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Remove the Retaining Ring A and Loading Brake Unit.
3. Remove the spring B and Pause Brake C.
4. Install a new Brake Unit and reverse the above steps to complete installation.

Note: When the Brake Unit is replaced following adjustments should be checked. (Refer to sections "FITTING ADJUSTMENT OF CASSETTE UP UNIT" for details).

10. MEASUREMENT OF SOFT BRAKING FORCE

* Specification:
Soft Braking Force A......(100-300g.cm)

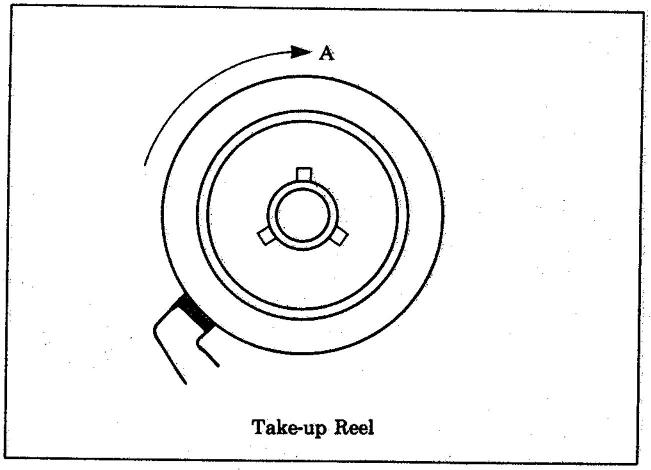

Fig. 33

A. Measurement Procedure

* Equipment Required:
Dial Torque Gauge (VFK0133)
Adaptor (VFK0134)

1. Remove the Top Panel and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Attach the adaptor to the torque gauge.
3. Turn Power Switch ON and push the tape insertion Detect Lever.
4. During subloading, turn the power Switch OFF.
5. Set the Torque Gauge to the Take-Up Reel Table. (See Fig.27)
6. Push the Brake Lever B by finger and hold it on.
7. Rotate the gauge slowly in the A directions and take the reading at the moment when the Reel Table begins slipping.

11. MEASUREMENT OF LOADING BRAKE FORCE AND REPLACEMENT OF LOADING BRAKE SOLENOID

A. Measurement Procedure

* Specification
Braking force A......(more than 700g-cm)

* Equipment Required:
Dial Torque Gauge (VFK69)
Adaptor (VFK0134)

1. Remove the Top Panel and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1. 2-7).
2. Attach the adaptor to the torque gauge.
3. Connect to Transistor Q20 E and C (Ststem control 2 Board), then Loading brack solenoid is performed.

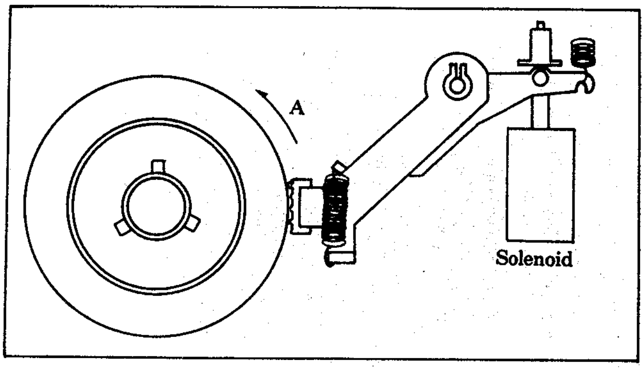

Fig. 34-a

4. Turn power switch on and push the Tape insertion Detect Lever, then Subloading operation is performed.
5. Blind the supply photo transistor(TR6302) with finger and continue to push the Tape insertion Detector Lever then push the Play Button for Loading.
6. During Loading, turn the power Switch OFF.
7. Set the Torque gauge to the Take-up Reel Table. (See Fig.27)
8. Push the Brake Lever B by finger and hold it on.
9. Rotate the gauge slowly in the A directions and take the reading at the moment when the Reel Table begins slipping.

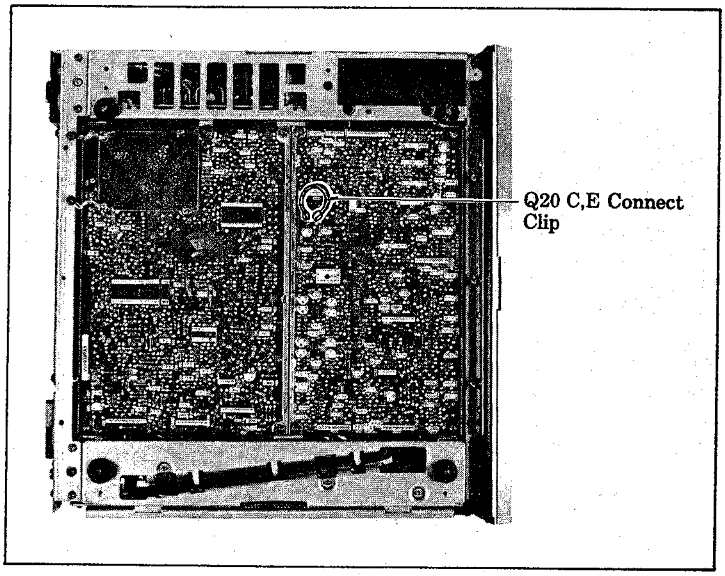

Fig. 34-b

㉒ NV-8200

12. REPLACEMENT AND ADJUSTMENT OF THE CAPSTAN HOLDER

A. Replacement Procedure

1. Remove the Top Panel, Cassette Up Unit.
   (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7)]
2. Remove the Retaining Ring (A), and theading Arm Unit.
3. Remove the threading Arm Spring.
4. Unscrew the screw (B) and Lamp Bracket Unit.

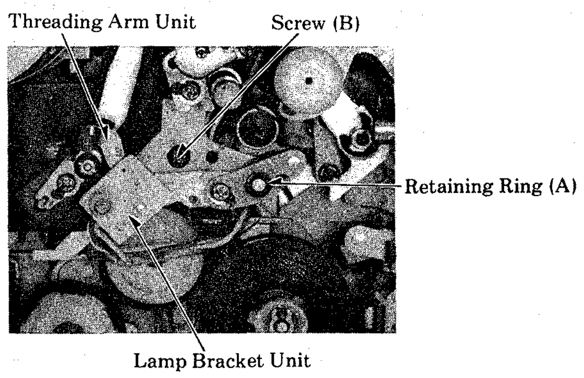
Threading Arm Unit
Screw (B)
Retaining Ring (A)
Lamp Bracket Unit

Fig. 35

5. Remove the oil cap and oil poor. Unscrew the 3 screws (C) and remove the Capstan Holder.
6. Install a new Capstan Holder and reverse the above steps to complete the installation.

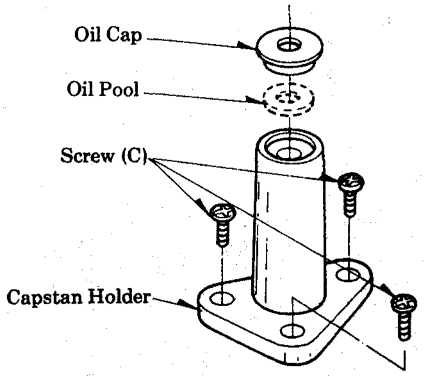
Oil Cap
Oil Pool
Screw (C)
Capstan Holder

Fig. 36

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B. Adjustment Procedure

* Equipment Required:
Capstan Reference Plate(VFK0141)

1. Install a new Capstan Holder and set the 3 screws (C) temporarily.
2. Place the jig, press and fit the Capstan Holder against the jig.
3. Tighten the 3 screws (C).

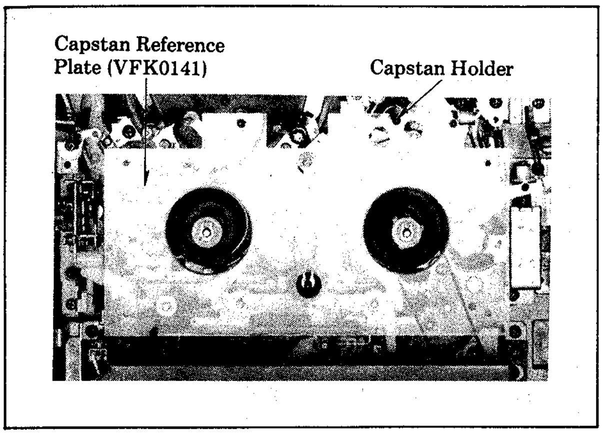

Fig. 37

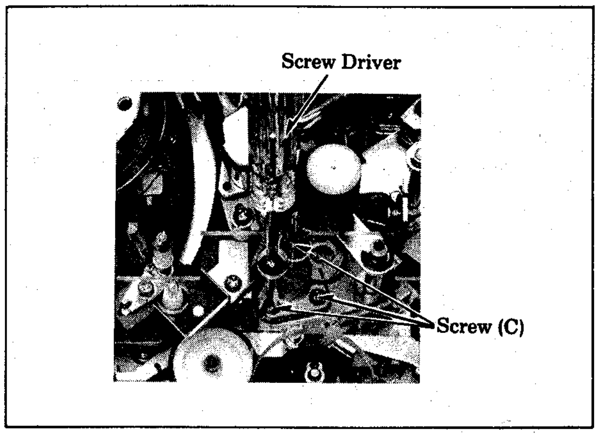

Fig. 38

Note: When the Capstan Holder is replaced, the following adjustment should be checked. (Refer to section "ADJUSTMENT OF CASSETTE UP UNIT" and Threading Arm Unit Item 12).

13. ADJUSTMENT OF SUBLOADING THREADING ARM UNIT

* Specification : 0.3-0.7mm

1. Remove the Top Panel. (Refer to section "DISASSEMBLY METHOD" Item 2-1).
2. Remove the reinforcement Angle. (See Fig.13)
3. Turn the power switch ON, and push the Tape Insertion Detect Lever.
4. Turn the Power switch OFF.
5. Loosen screw (A), and adjust the position of the subloading threading arm unit, so that the pin (B) touches the drive cam.
6. Tighten screw (A).
7. Turn the power switch ON and confirm, that the clearance between Post and A/C Head Unit is about 0.3-0.7mm.

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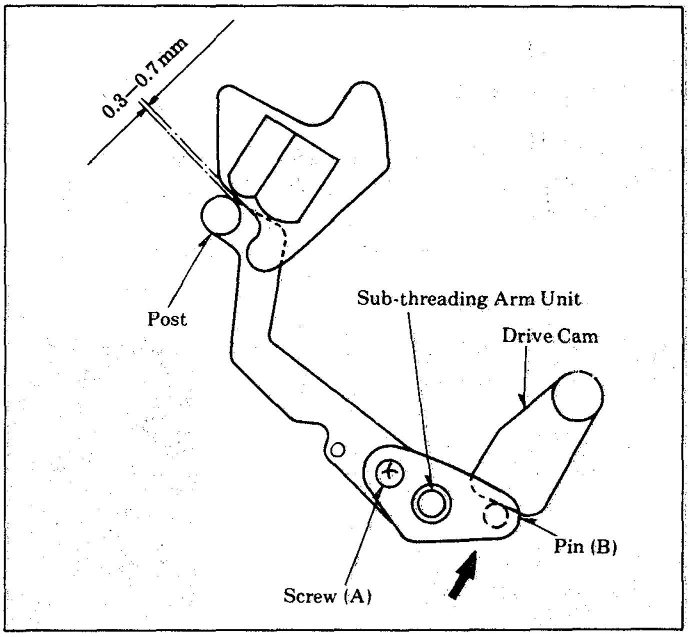

Fig. 39

14. REPLACEMENT AND ADJUSTMENT OF THE AUDIO/CONTROL HEAD BASE UNIT

A. Replacement Procedure

1. Remove the Top Panel
   (Refer to section "DISASSEMBLY METHOD" Item 2-1).
2. Unscrew the 2 screws (A) and remove the reinforcement Angle.
3. Unscrew the 2 screws (B) and remove the A/C Head Unit.
4. Unsolder the 10 lead wires.
5. Install a new A/C Head Base unit and reverse the above steps to complete the installation.

B. Adjustment Procedure

The height and tilt adjustment procedures of the A/C Head are described in "TAPE INTERCHANGEABILITY ADJUSTMENT" Item 26).
Note: When installing, be careful not to contact the wires connected from the relay board VJB00174 to the sensor lamp with the pressure roller.

15. REPLACEMENT OF PRESSURE ROLLER SOLENOID/ADJUSTMENT OF SPRING HOOK LEVER AND CONFIRMATION OF PRESSING FORCE

* Equipment Required
Retaining Ring Remover--4mm(VFK0145)

1. Remove the Top Panel. (Refer to section "DISASSEMBLY METHOD". Item 2-1).
2. Remove the reinforcement Angle. (See Fig.12)
3. Remove the Motor Fan.
4. Disconnect the connector P612. (Audio/C.T.L. head signals)
5. Unscrew screw (A) and remove the clamper.
6. Unscrew the 2 screws (B) and remove the shield spring Angle.
7. Remove the Retaining Ring (C) and connecting Link and connecting Lever B.
8. Remove the Retaining Ring (D), Rivet (E) and solenoid Lever.

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9. Unscrew the 3 screws (F) and remove the solenoid Bracket.
10. Unscrew the 2 screws (G) and remove the Pressure solenoid (H).
11. Unsolder the 2 lead wires (Orange and Blue) from the solenoid.
12. Install a new Pressure solenoid and reverse the above steps to complete the installation.

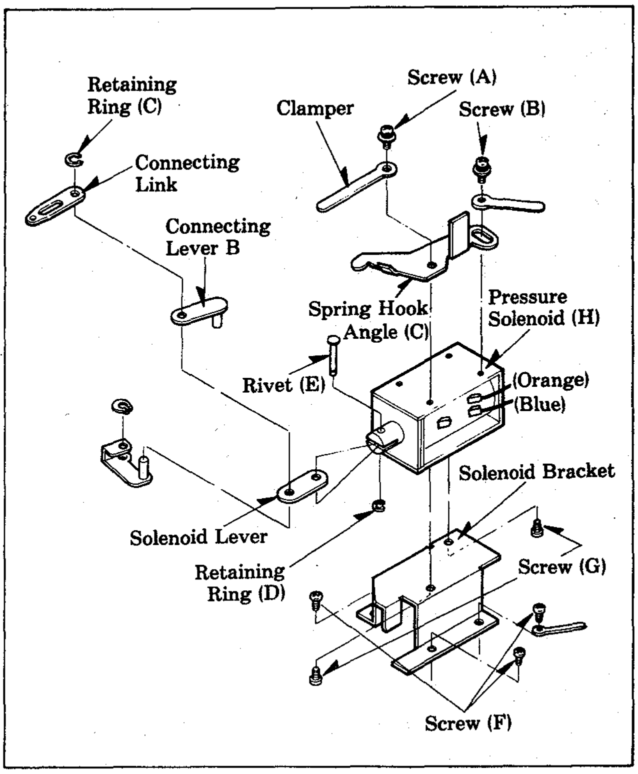
Retaining Ring (C)
Screw (A)
Clamper
Screw (B)
Connecting Link
Connecting Lever B
Spring Hook Angle (C)
Pressure Solenoid (H)
Rivet (E)
(Orange)
(Blue)
Solenoid Bracket
Solenoid Lever
Retaining Ring (D)
Screw (G)
Screw (F)

Fig. 40

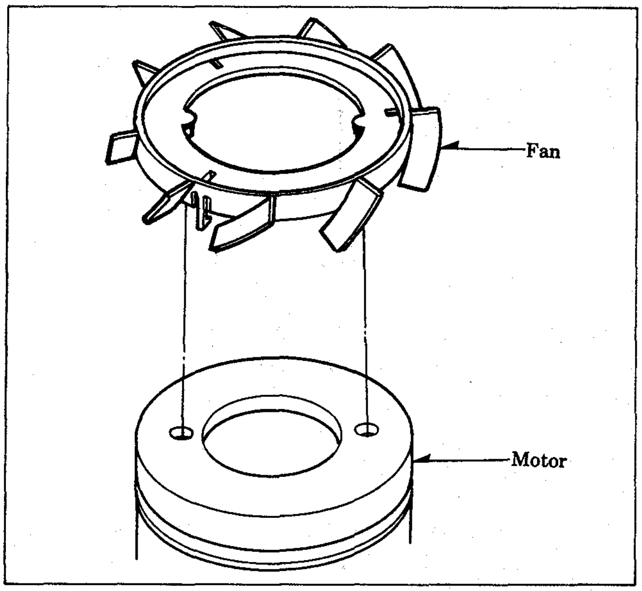

Fig. 41

B. Adjustment Procedure

1. Remove the Top Panel. (Refer to section "DISASSEMBLY METHOD" Item 2-1).
2. Press the Solenoid Plunger with your finger to simulate the PLAY mode, and adjust screw (A) for the proper clearance (0.2-0.5mm).

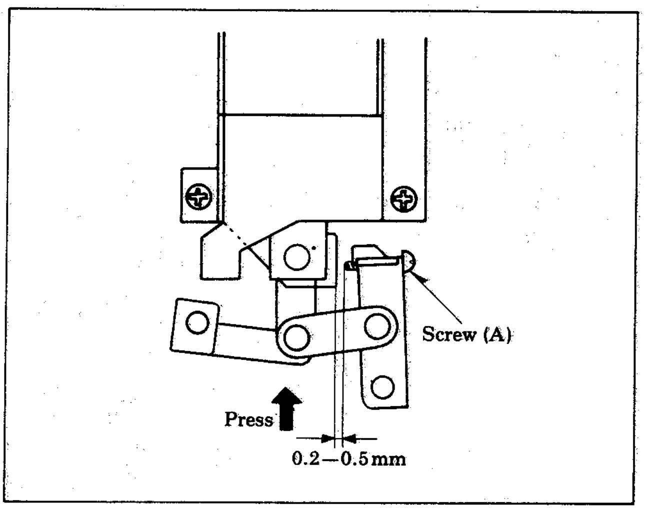

Fig. 42

C. Confirmation Process

* Equipment Required:
Fan-type Tension Gauge(VFK66)

1. Playback the Cassette Tape.
2. Set a Fan-type Tension Gauge to the part (A) of Main Pressure Arm Unit.
3. Press the Lever with gauge, in the direction indicated by the arrow.
4. Confirm that the tension gauge reading is 2,000±200g at the moment tape stops.

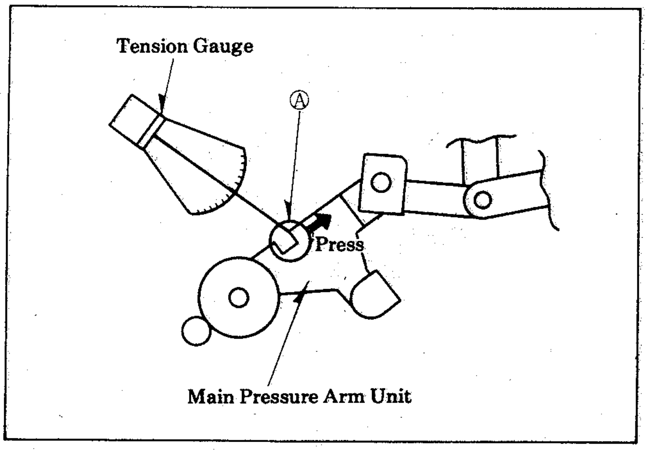

Fig. 43

16. POSITION ADJUSTMENT OF TENSION POST

1. Remove the Top Panel and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Remove the reinforcement Angle. (See fig.13)
3. Turn power switch ON and push the Tape Insertion Detect Lever, then subloading operation is performed.

4. Blind the supply photo Transistor(TR6302) with finger, and continue to push the Tape Insertion Detect Lever.
   Then push the Play Button for loading.
5. As soon as loading is completed, turn the power switch OFF.
6. Make sure that the Head Cylinder stopped completely, and measure the length from the tension post to the cassette support post.

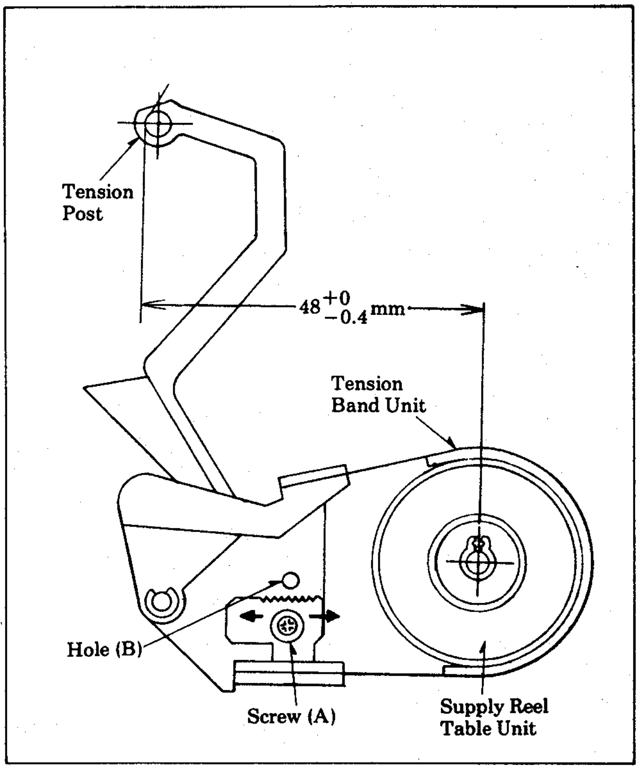

Fig. 44

B. Adjustment Procedure

* Equipment Required:
Fine Adjustment Screwdriver(VFK0136), Screwdriver (+).
(TENSTION POST)
Loosen the screw (A), and place the fine adjustment screwdriver to the Hole (B) and adjust the position by displacing the Tension Band Bracket in the direction indicated by arrow.
Notes:

1. After adjustment, playback a cassette tape and make sure that the tape does not come into contact with cassette case when it is loading.
2. Upon completion of the adjustment, "FITTING ADJUSTMENT OF CASSETTE UP UNIT" also should be checked.

17. ADJUSTMENT OF CASSETTE SUPPORT HEIGHT

Adjustment Procedure

* Equipment Required:
Post Adjustment Plate(VFK0138)
Hex wrench 1.5mm(VFK76)

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1. Remove the Top Panel and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Place the Post Adjustment Plate to the proper position and loosen a hex screw.

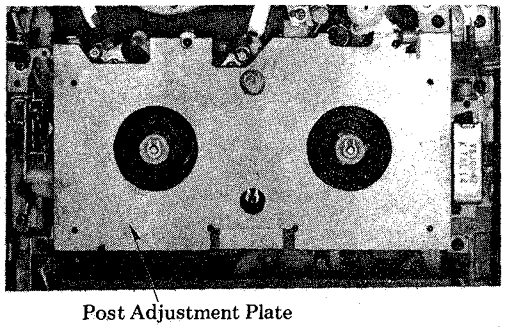
Post Adjustment Plate

Fig. 45

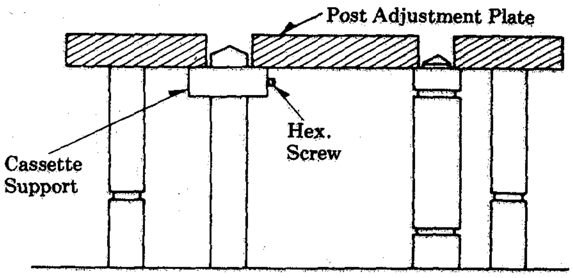
Post Adjustment Plate
Hex. Screw
Cassette Support

Fig. 46

3. Adjust the height of the cassette support so that it has no clearance between the plate and cassette support, then tighten the hex screw.

Note: Upon completion of adjustment, "ADJUSTMENT OF CASSETTE UP UNIT" also sould be checked.

18. REPLACEMENT AND HEIGHT ADJUSTMENT OF REEL TABLES

A. Replacement Procedure

* Equipment Required
Retaining Ring Remover--4mm(VFK0145)
Remove the Top Panel, and the Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).

1. Remove the counter belt B.
2. Remove the Retaining Ring, Washer, and then the Tekeup Table Unit can be removed.

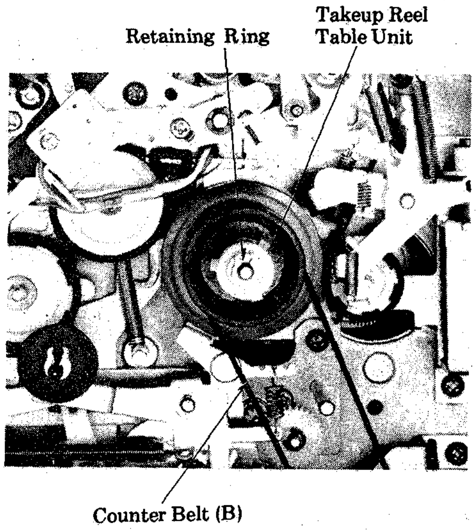
Retaining Ring
Takeup Reel Table Unit
Counter Belt (B)

Fig. 47

(SUPPLY REEL TABLE UNIT)

1. Remove the 2 Retaining Rings and 2 washers.
2. Remove the Tension Arm Unit from the Shaft and remove the Supply Reel Table Unit.
3. Install a new Reel Table and reverse the above steps to complete the installation.

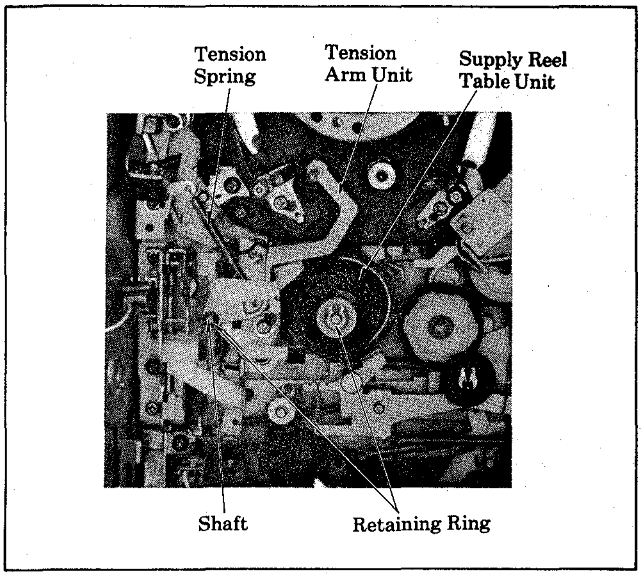
Tension Spring
Tension Arm Unit
Supply Reel Table Unit
Shaft
Retaining Ring

Fig. 48

Notes:

1. Do not put any oil or grease on the Counter Belt, and Reel Tables, Idlers or Brake Shoes.
2. Upon completion of adjustment, "FITTING ADJUSTMENT OF CASSETTE UP UNIT" also should be checked.

B. Height Adjustment Procedure

* Equipment Required:
Post Adjustment Plate(VFK0138)
Reel Table Height Jig(VFK0139)
Hex Wrench-1.5mm(VFK76)

1. Place the Post Adjustment Plate in its proper position

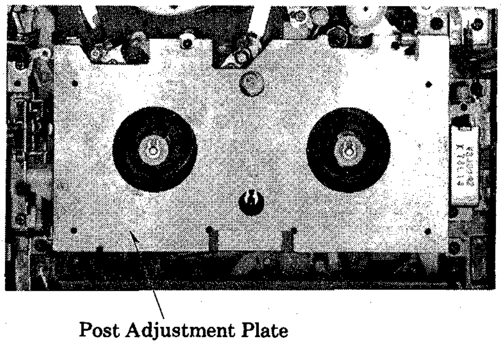
Post Adjustment Plate

Fig. 49

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2. Set the Dial Gauge into the U-shaped Block and place it on the Adjustment Plate.
3. Fit the sensor of Dial Gauge on the cut-out of the adjustment plate, and set the pointer to 0 (Zero).

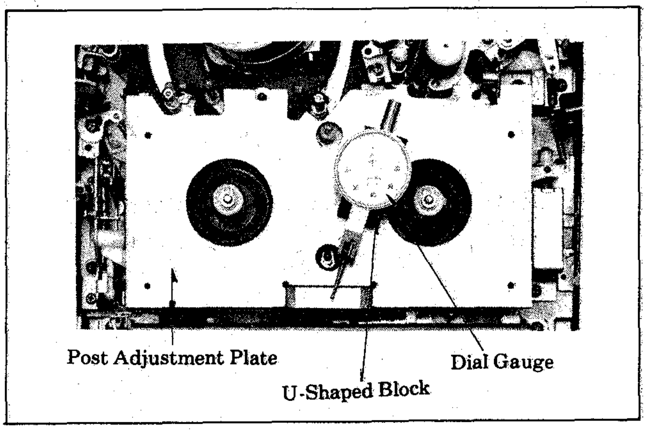
Post Adjustment Plate
U-Shaped Block
Dial Gauge

Fig. 50

4. Fit the sensor of Dial Gauge on the top of Reel Table and take the reading of the gauge.
5. When the difference of the reading is more than 0.1mm, it suggests that the adjustment is needed.

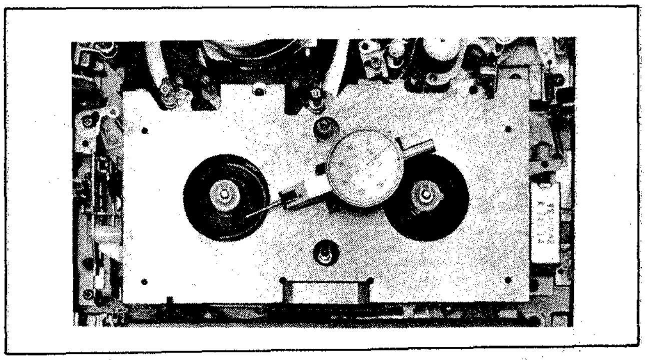

Fig. 51

6. Change the polyslider washer. (The washer is available in sizes of t=0.13mm, 0.25mm and 0.5mm).
   0.13mm.....XWXV4Z65
   0.25mm.....XWXV4A65
   0.5mm XWXV4D65

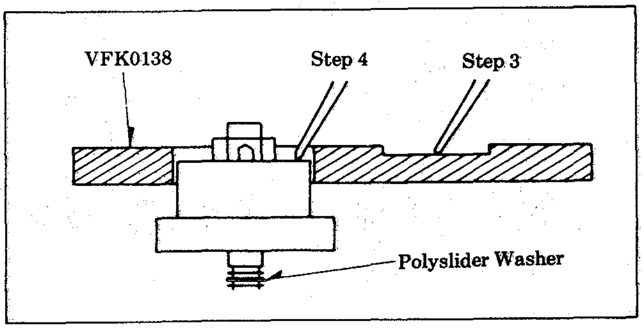
VFK0138
Step 4
Step 3
Polyslider Washer

Fig. 52

Note: Upon completion of replacement and adjustment, "ADJUSTMENT OF CASSETTE UP UNIT" also should be checked.

19. CONFIRMATION OF TAKEUP FORCE

* Specifications:
in PLAY 150-200g-cm
in F.F ...... more than 350g-cm
in REW ...... more than 400g-cm

Confirmation Procedure

* Equipment Required:
Dial Torque Gauge(VFK0133)
Adaptor (VFK0134)

1. Remove the Top Panel, and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7).
2. Attach the Adaptor to the Torque Gauge.

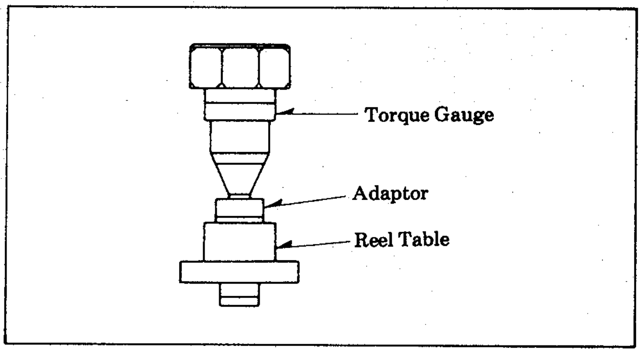

Fig. 53

3. Turn power switch ON.
4. Blind Photo Transistor (Q6302, Q6303) with a piece of opaque paper or black tape.
5. Set a Torque Gauge to the Reel Table, press the PLAY button, and take the read of gauge.
6. Make the same measurement for F.F. and Rew. modes.

Notes:
1. When measuring, make sure that there is no slippage between Idler and Reel Talbe as well as Idlers.
2. When measuring, the weight of Torque Gauge should be free against Reel Tables.
3. Remove piece of paper after confirmation.

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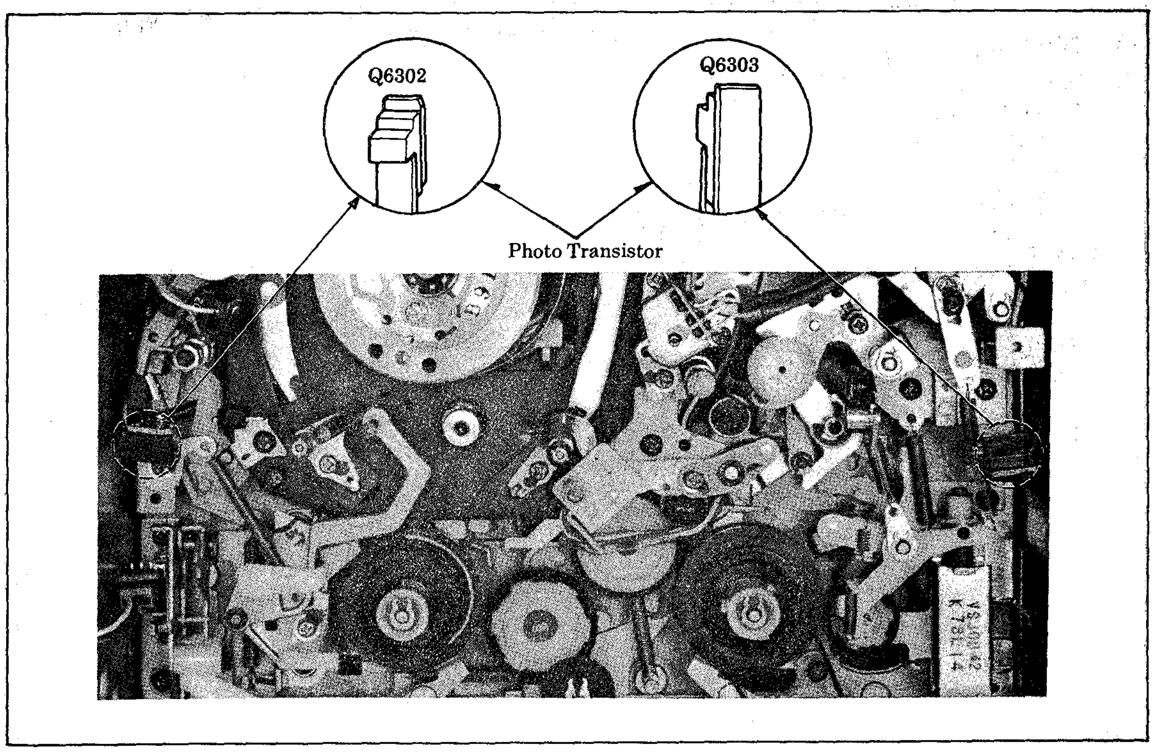
Q6302
Q6303
Photo Transistor

Fig. 54

20. ADJUSTMENT OF TAPE GUIDE POST HEIGHT

Adjustment Procedure

* Equipment Required:
Post Adjustment Plate(VFK0138)
Post Adjustment Screwdriver(VFK0137)
Block Gauge(VFK0139)

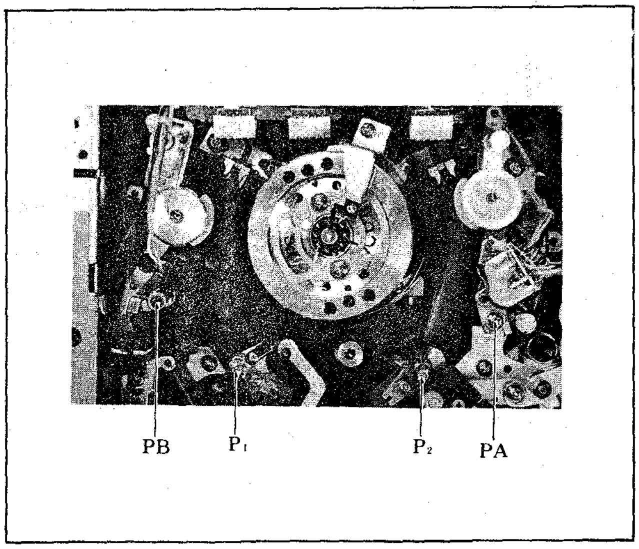

Fig. 55

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1. Remove the Top Panel, and Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1 and 2-7)
2. Place the Post Adjustment Plate to the proper position and put the Block Gauge on it.

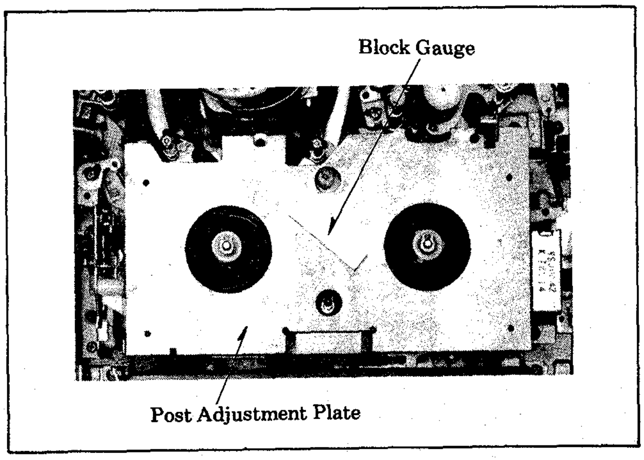
Block Gauge
Post Adjustment Plate

Fig. 56

3. Fit the block gauge against each post.

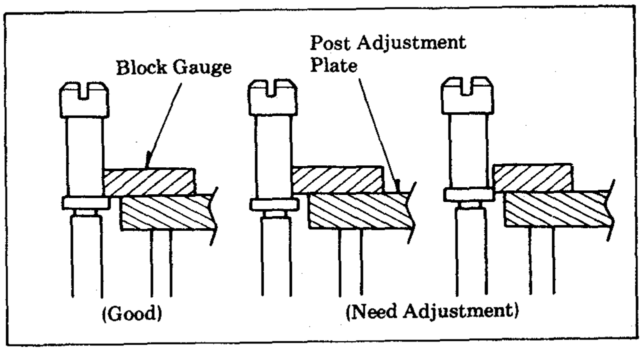
Block Gauge
Post Adjustment Plate
(Good)
(Need Adjustment)

Fig. 57

4. Loosen the locking hex xcrews of posts, then turn the top of post-1, post-2 with post adjustment screwdriver.
   Use the box driver for adjustment of post PA, PB.

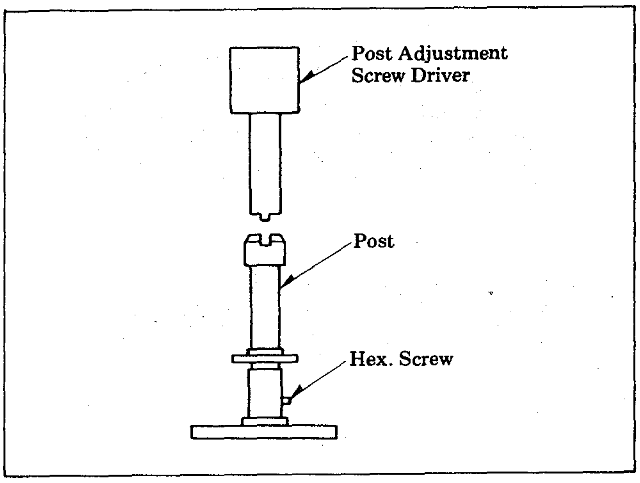
Post Adjustment Screw Driver
Post
Hex. Screw

Fig. 58

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Note: Upon completion of adjustment, "ADJUSTMENT OF CASSETTE UP UNIT" also should be checked.

21. REPLACEMENT OF BUTTON UNIT

1. Remove the Top Panel, the Bottom Plate and the Front Panel. (Refer to section "DISASSEMBLY METHOD" Items 2-1, 2-3 and 2-6).
2. Unscrew the 4 screws (A) and remove the Button Unit.
3. Disconnect the connectors P631, P632 and P633.
4. Unscrew the 7 screws (B) and remove the Button Unit from the P.C.Board.
5. Install a new Button Unit and reverse the above steps to complete the installation.

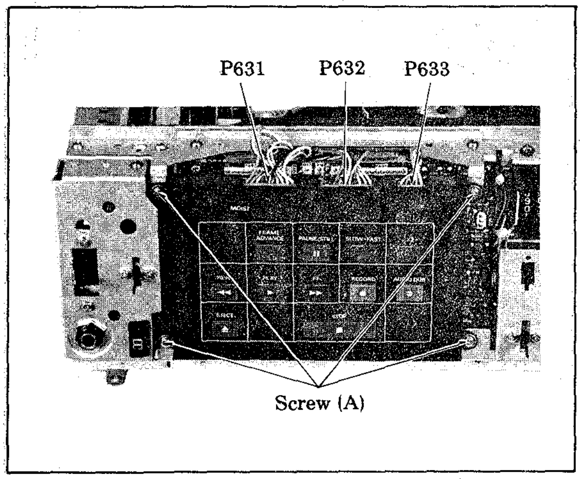

Fig. 59

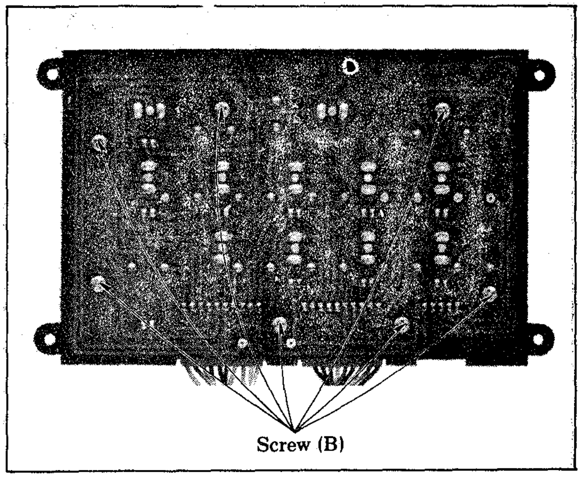

Fig. 60

22. REPLACEMENT OF TAPE COUNTER

Replacement Procedure

1. Remove the Top Panel, Bottom Plate and Front Panel.
2. Unscrew the screw (A) and remove the counter Belt (A).
3. Remove the Tape counter.
4. Unsolder the 2 lead wires (Brown and Yellow) from the Tape counter.
5. Install a new Tape Counter and reverse the above steps to complete the installation.

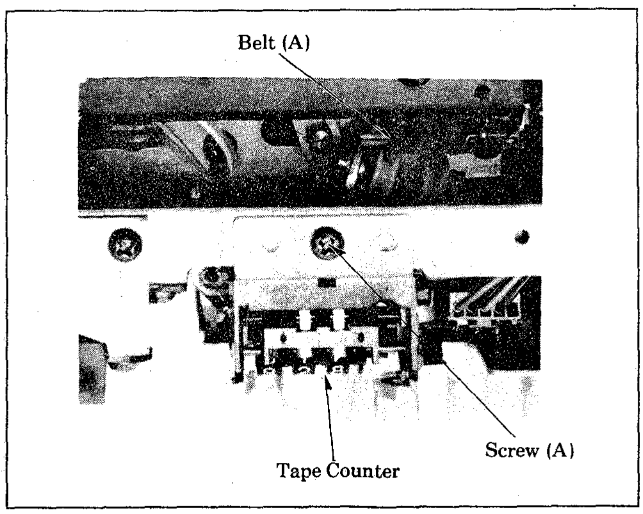

Fig. 61

23. REPLACEMENT OF COUNTER BELT(A & B)

1. Remove the Top Panel, the Bottom Plate, the Front Panel, and the Cassette Up Unit. (Refer to section "DISASSEMBLY METHOD" Items 2-1, 2-3, 2-6 and 2-7).
2. Remove the counter Belt B.
3. Remove the counter Belt A.

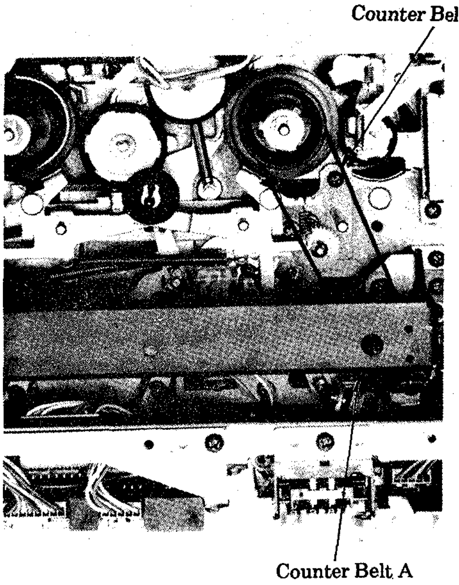

Fig. 62

Note: Upon completion of replacement, "ADJUSTMENT OF CASSETE UP UNIT", also should be checked.

24. REPLACEMENT OF REEL BELT A, B AND CAPSTAN BELT

Replacement Procedure

When replacing Reel Belt A, follow steps 1 to 4.
When replacing Reel Belt B, follow steps 1 and 3
When replacing Capstan Belt, follow steps 1 to 6.

1. Remove the Bottom Panel and unscrew the 5 screws. (Refer to section "DISASSEMBLY METHOD" Items 2-3 and 2-8).
2. Remove the Control Belt from the control pulley unit.
3. Remove the Reel Belt B.
4. Remove the Reel Belt A.
5. Unscrew the 2 screws (B) and remove the Thrust Holder Unit.
6. Remove the Capstan Belt.
7. Install a new belt and reverse the above corresponding steps to complete the installation.

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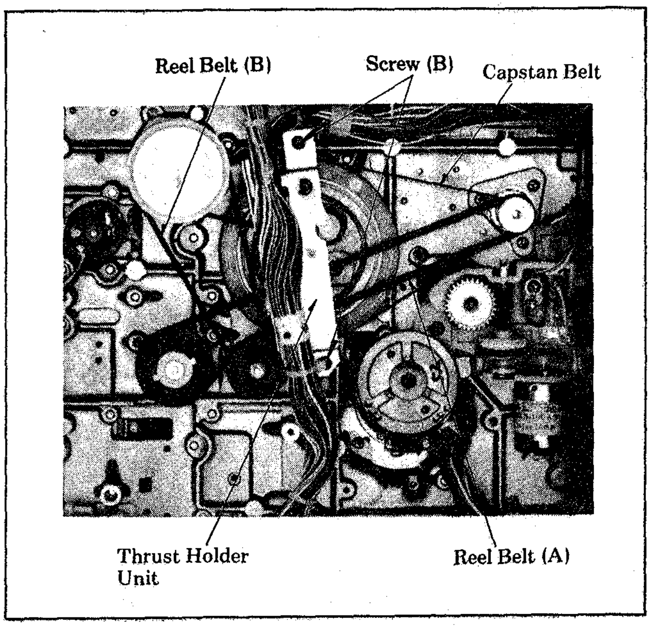
Reel Belt (B)
Screw (B)
Capstan Belt
Thrust Holder Unit
Reel Belt (A)

Fig. 63

25. REPLACEMENT OF LOADING BELT AND LOADING MOTOR UNIT

A. Replacement Procedure of Loading Belt.

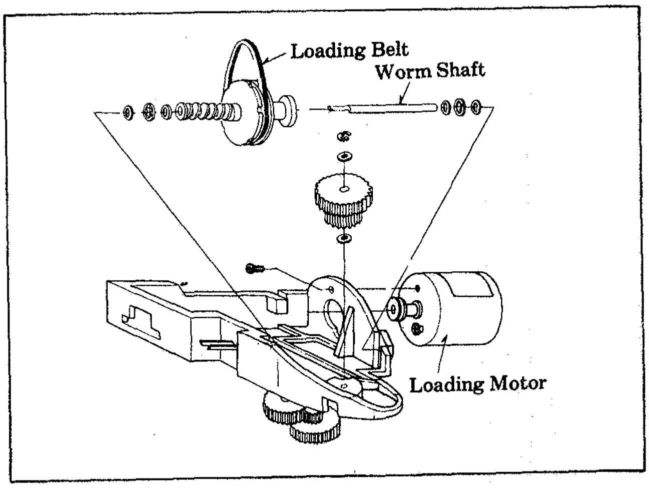
Loading Belt
Worm Shaft
Loading Motor

Fig. 64

1. Remove the Bottom Plate and unscrew the 5 screws. (Refer to section "DISASSEMBLY METHOD" Items 2-3 and 2-8).
2. Push the Worm Shaft and remove the Worm Shaft.
3. Remove the Loading Belt.
4. Install a new Loading Belt and reverse the above steps to complete the installation.

Note: Do not put any oil or grease on the Loading Belt.

B. Replacement Procedure of Loading Motor Unit

1. Remove the Loading Belt from the Motor Pulley.
2. Unscrew the screw (A).
3. Unsolder the 2 lead wires from the motor and remove the loading motor unit.

Note: Do not remove the loading motor base unit.
If the loading motor base unit is removed, it needs "GREASE ADJUSTMENT".

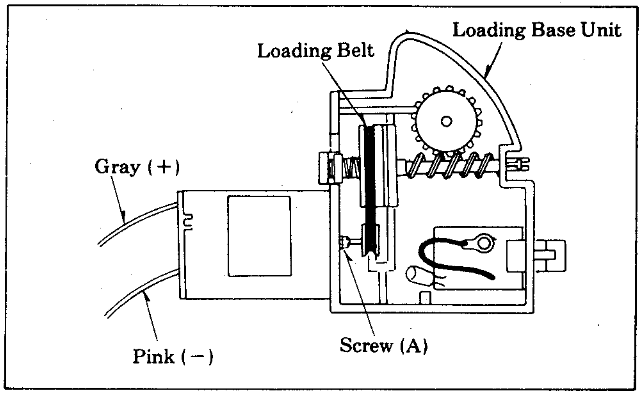
Loading Base Unit
Loading Belt
Gray (+)
Pink (−)
Screw (A)

Fig. 65

26. REPLACEMENT OF SUPPLY INERTIA ROLLER UNIT

1. Remove the Top Panel. (Refer to section "DISASSEMBLY METHOD" Item 2-1).
2. Unscrew the 2 red screws (A) and remove the reinforcement Angle. (See Fig.12).
3. Remove Retaining Ring (B) and Inertia Roller Spring and then Supply Inertia Roller Unit.
4. Install a new Roller Unit and reverse the above steps to complete the installation.

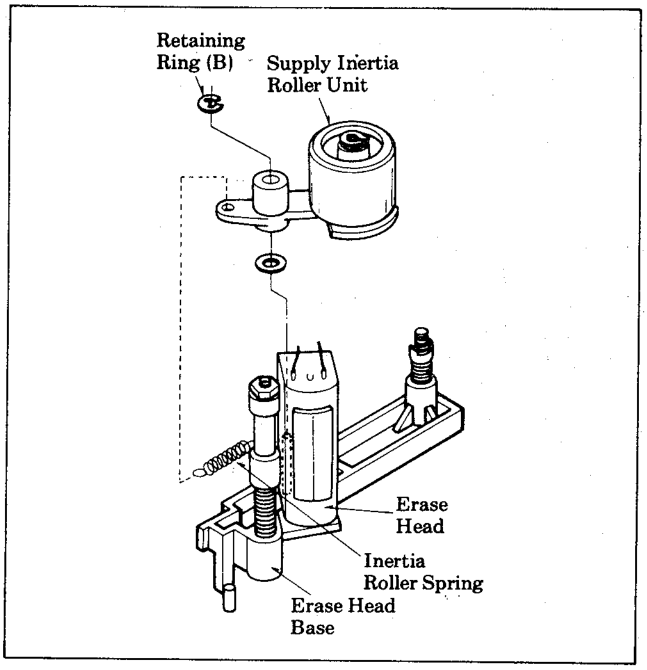
Retaining Ring (B)
Supply Inertia Roller Unit
Erase Head
Inertia Roller Spring
Erase Head Base

Fig. 66

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27. REPLACEMENT OF TAKEUP INERTIA ROLLER UNIT

Replacement Procedure

1. Remove the Top Panel. (Refer to section "DISASSEMBLY METHOD" Item 2-1).
2. Unscrew the 2 red screws and remove the reinforcement Angle. (See Fig.12).
3. Take off the Panel Support.
4. Pull out the Takeup Inertia Roller Unit and remove the Inertia Roller Spring.
5. Install a new Takeup Inertia Roller Unit and reverse the above steps to complete the installation.

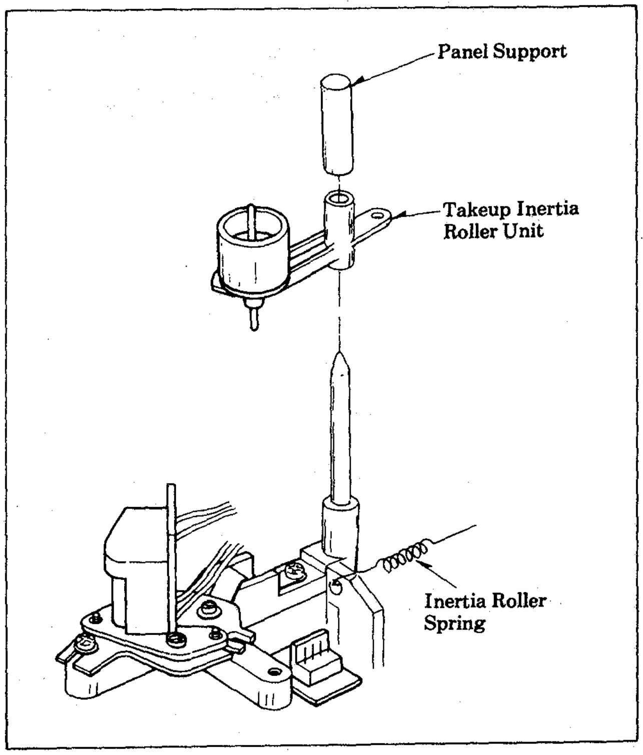

Fig. 67

28. TAPE INTERCHANGEABILITY ADJUSTMENT

* Equipment Required:
Alignment Tape(VFM8100H3D)
Post Adjustment Screwdriver(VFK0137)
Eccentric Screwdriver(VFK0135)
Hex Wrench-0.9mm(VFK0146)
Hex Wrench-1.5mm(VFK76)
Box Wrench Pliers

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A. Pre-adjustment for Posts and Audio/Contro Head Height

To prevent the alignment tape from being damaged, use a normal cassette tape for pre-adjustment procedure.

1. Playback a cassette tape and make sure that the edges of the tape are not curling against the edges of the posts PA, P1, and P2, PB.

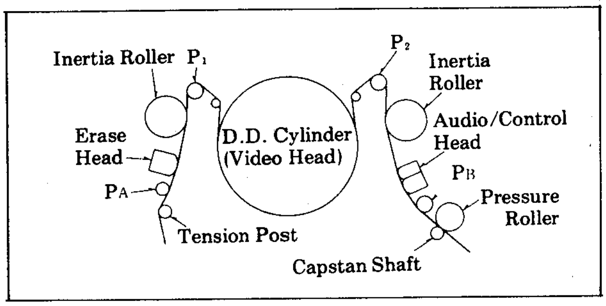
Inertia Roller P1
P2
Inertia Roller
Erase Head
D.D. Cylinder (Video Head)
Audio/Control Head
PB
PA
Pressure Roller
Tension Post
Capstan Shaft

Fig. 68

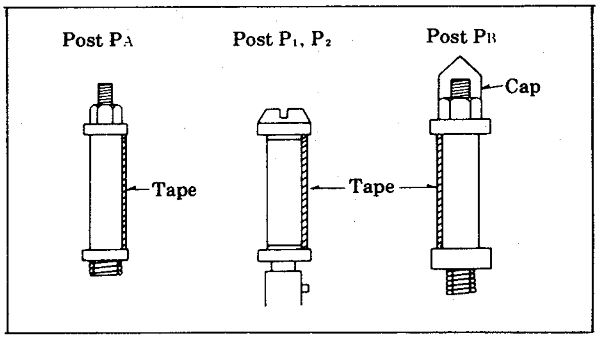
Post PA
Post P1, P2
Post PB
Cap
Tape
Tape

Fig. 69

2. If curling is appearing, adjust each post as shown below.
   A) When adjusting Post P1, P2, use the Post adjustment screwdriver VFK0137.
   B) When adjusting Post PA, PB, tighten and loosen the nut by using box wrench or plier.

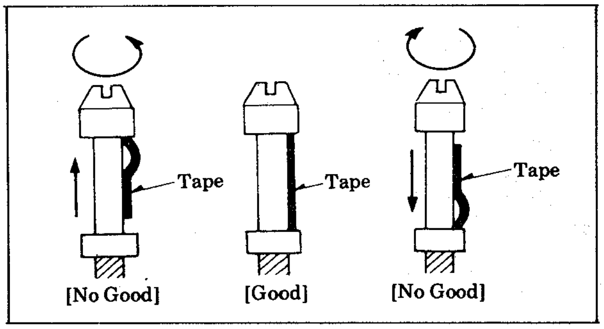
Tape
Tape
Tape
[No Good]
[Good]
[No Good]

Fig. 70

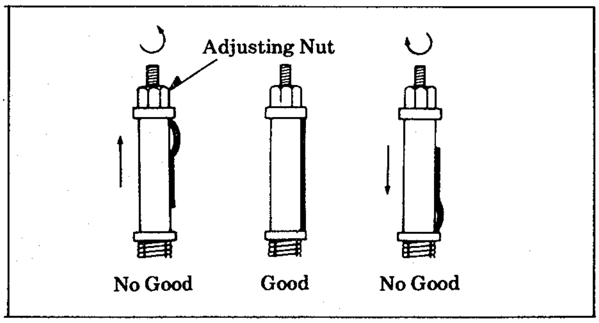
Adjusting Nut
No Good
Good
No Good

Fig. 71

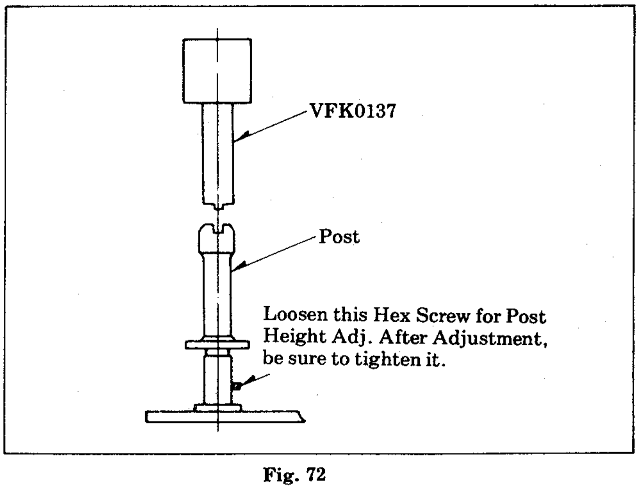
VFK0137
Post
Loosen this Hex Screw for Post Height Adj. After Adjustment, be sure to tighten it.

Fig. 72

3. Adjust the 2 screws (A) and the screw (B) so that the Audio/Control Head height becomes as shown below.

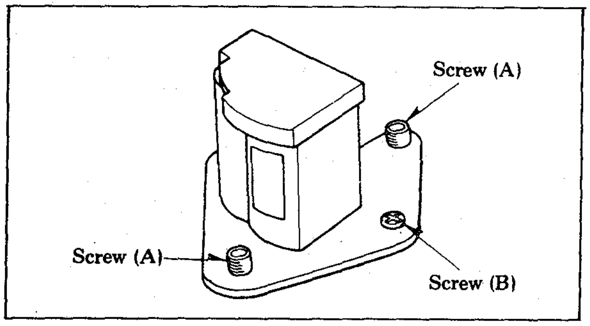

Fig. 73

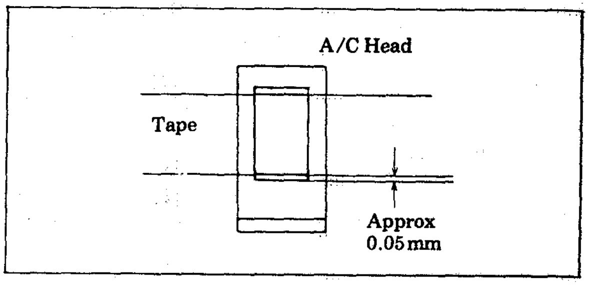

Fig. 74

B. Tape Interchangeability Adjustment

* Connect an oscilloscope to TP11 of VEP0389 on the Bottom circuit Boards.

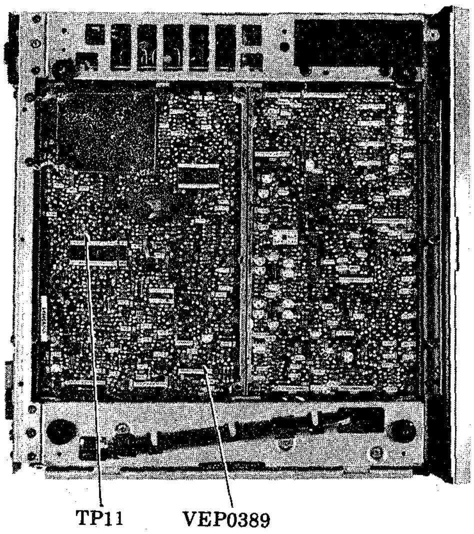

Fig. 75

Playback the monoscope pattern of the alignment tape FVM8100H3D.

B-1. Tape Crease and Slack Adjustment

1. Watch the portions between Post P1, and PA and between Post P_2 and PB carefully.
2. If tape crease of slack is appearing at these positions adjust the position of the inclined base.
   To adjust it, loosen the screw (A) slightly, set the eccentric screwdriver(VFK0135) to the hole (B) and move the base as shown.

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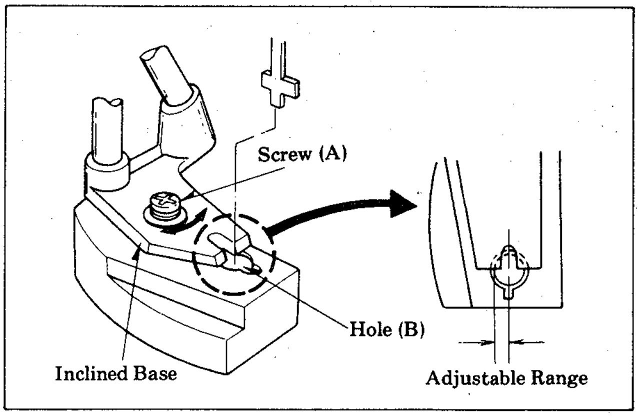
Screw (A)
Hole (B)
Inclined Base
Adjustable Range

Fig. 76

B-2. Post Height Adjustment

While playing back the monoscope portion of the alignment tape VFM8100H3D, adjust posts PA, P1 and P2 by watching the scope display so that the RF envelope on the scope becomes as flat as possible. $(V1/V \geqq 0.7V,\ V2/V \geqq 0.7)$

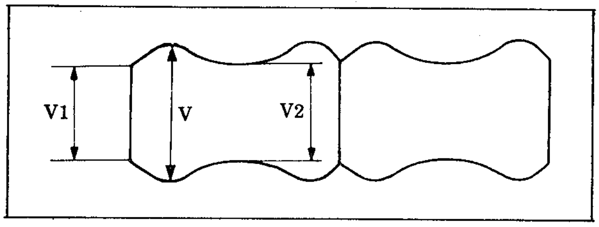

Fig. 77

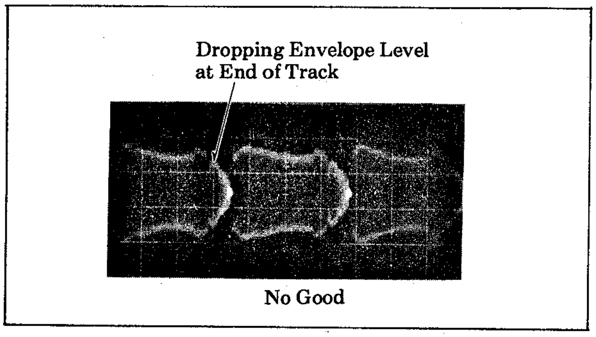
Dropping Envelope Level at End of Track
No Good

Fig. 78

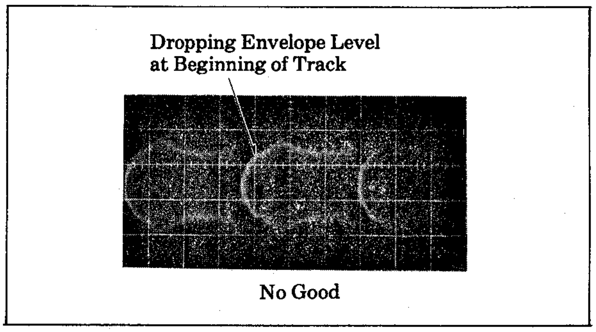
Dropping Envelope Level at Beginning of Track
No Good

Fig. 79

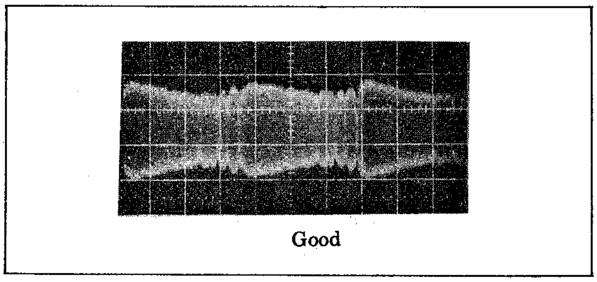

Fig. 80

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B-3. Audio/Control Head Position Adjustment

1. Be sure to set the Tracing Control on the Front Panel to the center position. (Fix Position).
2. (A/C Head Tilt Adjustment)
   While playing back the monoscope portion of the alignment tape VFM8100H3D, adjust the hex screws (A) for the maximum FR envelope on the scope.

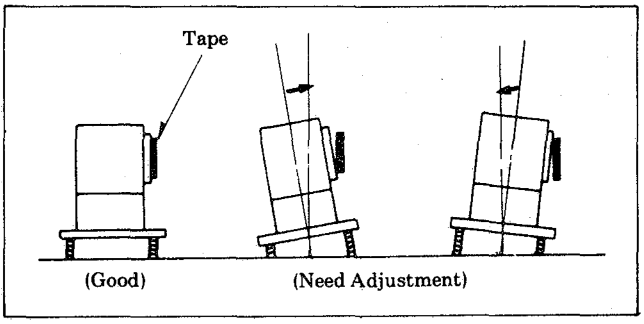


Fig. 81

3. (A/C Head Horizontal Position Adjustment)
   While playing back the monoscope portion of the alignment tape VFM8100H3D, loosen the 2 screws (A) and move the A/C Head horizontally for the maximum RF envelope on the scope.

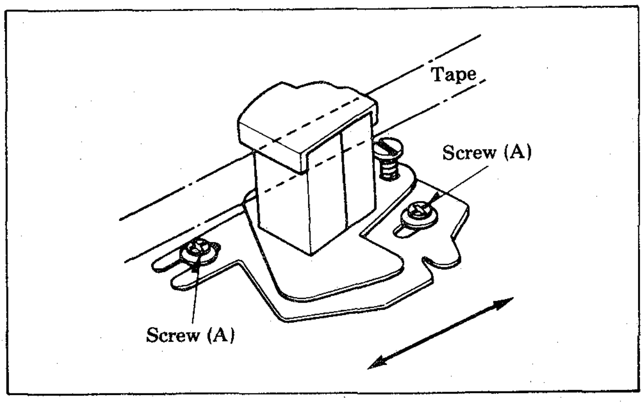
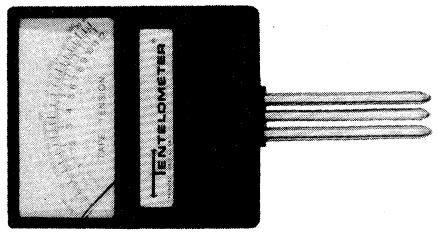
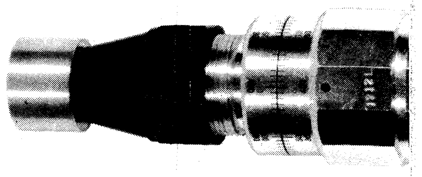
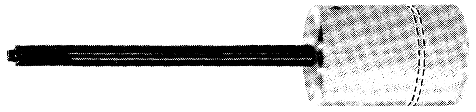
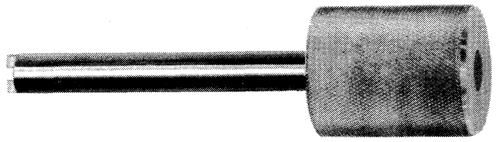
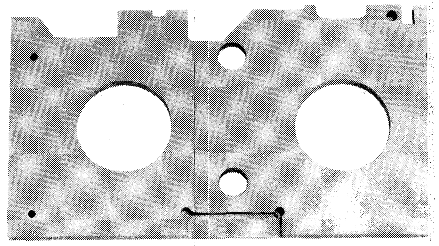
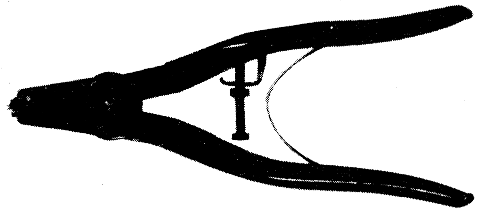
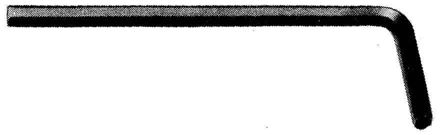
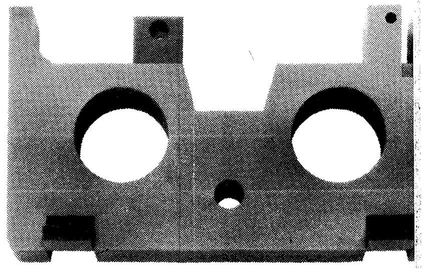
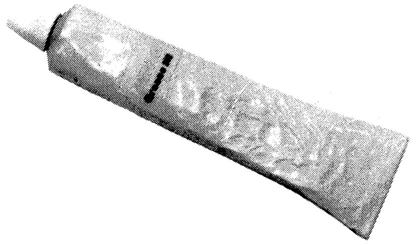


Fig. 82

MEMO

Servicing Jigs & T

VFM8100H3D VHS Alignment Tape 	**Back Tension Meter** (Tentelometer, Made in U.S.A.) 	**VFK0133** Dial Torque Gau **VFK0134** Adaptor for VFK 
VFK0136 Fine Adjustment Screwdriver 	**VFK0137** Post Adjustment Screwdriver 	**VFK0138** Post Adjustment I 
VFK0144 Retaining Ring Remover (3mm) **VFK0145** Retaining Ring Remover (4mm) 	**VFK0146** Hex. Wrench (0.9mm) **VFK75** Hex. Wrench (1.25mm) **VFK76** Hex. Wrench (1.5mm) 	**VFK0179** Cassette Holde 
MOR265 Morlytone Grease 		

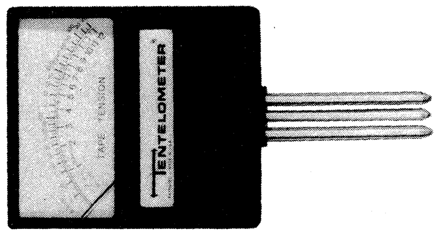
NOTE: VFK0179 is new fixture. VFK0142 will not fit and can not be used.

㊸ NV-8200

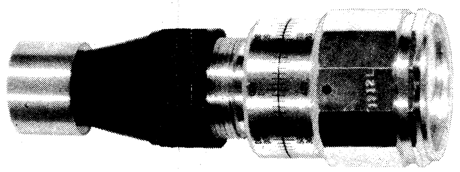
Servicing Jigs & Tools

VFM8100H3D VHS Alignment Tape

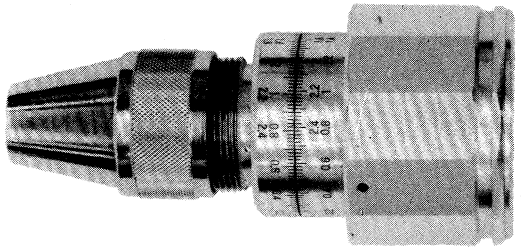
Back Tension Meter
(Tentelometer, Made in U.S.A.)



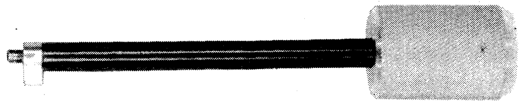
VFK0133 Dial Torque Gauge
VFK0134 Adaptor for VFK0133



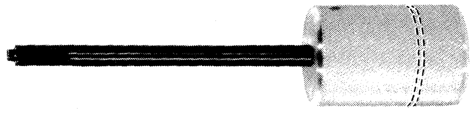
VFK69 Dial Torque Gauge



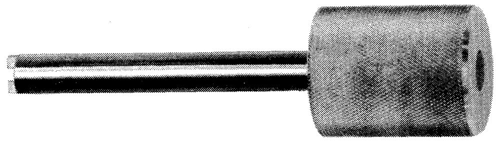
VFK0135 Eccentric Screwdriver



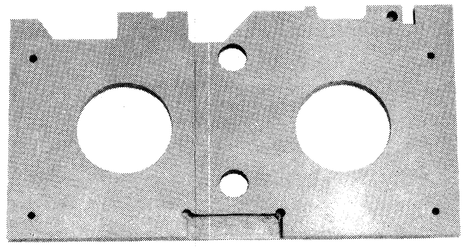
VFK0136 Fine Adjustment Screwdriver



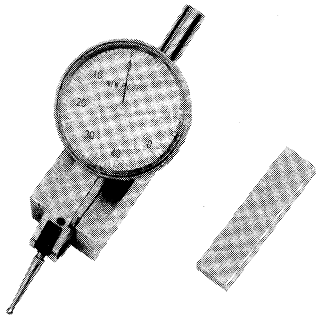
VFK0137 Post Adjustment Screwdriver



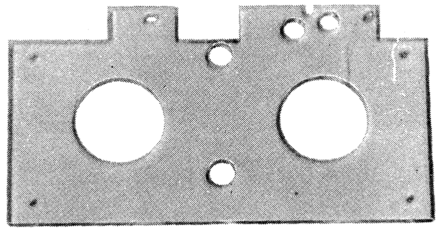
VFK0138 Post Adjustment Plate



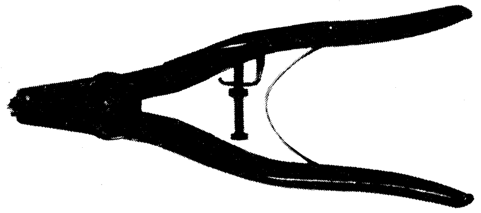
VFK0139 Reel Table Height Jig



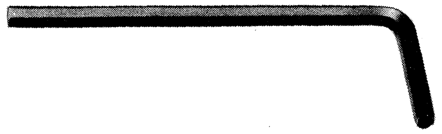
VFK0141 Capstan Reference Plate



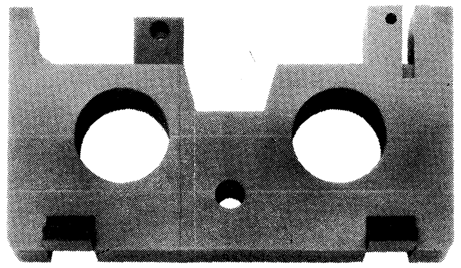
VFK0144 Retaining Ring Remover (3 mm)
VFK0145 Retaining Ring Remover (4 mm)



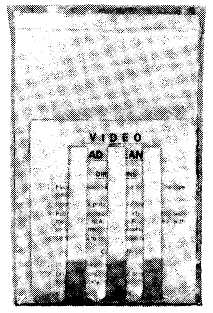
VFK0146 Hex. Wrench (0.9 mm)
VFK75 Hex. Wrench (1.25 mm)
VFK76 Hex. Wrench (1.5 mm)



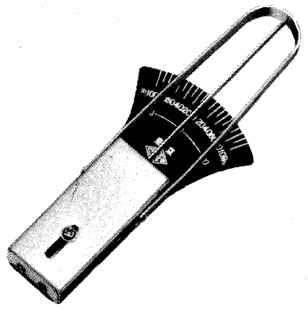
VFK0179 Cassette Holder Jig



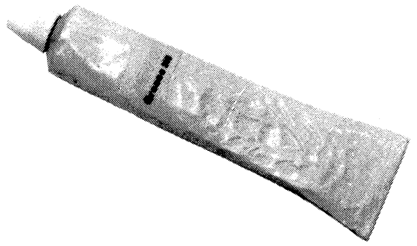
VFK27 Head Cleaning Stick



VFK66 Fan-type Tension Gauge



MOR265 Morlytone Grease



NOTE: VFK0179 is new fixture. VFK0142 will not fit and can not be used.

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ELECTRICAL ADJUSTMENT PROCEDURES

This section provides complete electrical adjustment procedures which may be required for electronic circuits.

Test Equipment

To make adjustments completely, following equipment is required.

1. VTVM (Vacuum Tube Volt Meter)
   Voltage Range : 0.001 - 50 V
2. Dual-trase Oscilloscope
   Voltage Range : 0.005 - 50 V/div.
   Frequency Range : DC - 10 MHz
   Probes : 10:1 and 1:1
3. Frequency Counter
   Frequency Range : 0 - 10 MHz
4. Signal Generator
   Sinewave : 0 - 10 MHz
5. Color Receiver or Monitor
6. Plastic Tip Driver
7. VHS Alignment Tape (VFM8100H3D)
8. Sweep Generator
   Frequency Range : 0 - 10 MHz
9. Colour Bar Generator

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1. +12VDC Adjustment [STOP mode]

Test Point : TP2 (System Control 2, VJB0686)
Adjustment : R193 (+12 V ADJ)

1. Connect a VTVM to TP2 on the System Control 2 board.
2. Adjust the +12 V ADJ (R193) on the same board for 12.0 V ± 0.1 V.

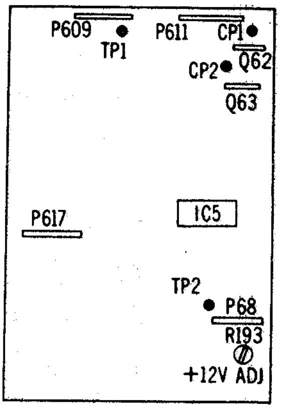
P609
TP1
P611
CP1
CP2
Q62
Q63
P617
IC5
TP2
P68
R193
+12V ADJ

Fig. 1 System Control 2 Board

2. Supply and Takeup Photo Transistor Sensitivity Confirmation

A. Supply Photo TR

1. Connect a 56 Ω resistor between TP1 on the System Control 2 board and ground.
2. Remove the Cassette Compartment Cover.
3. Press down the Cassette Compartment without a tape.
4. Make sure that Sub-loading operation is performed when the Tape Insertion Detect Lever is pressed down.
5. While pressing down the lever, push the PLAY key. (Do not blind the Sensor Lamp.)
6. Make sure that Loding operation is NOT performed.
7. If loading operation is performed under the above conditions, connect CP1 cut point with a jumper.
8. Make sure to recheck steps 5 and 6.

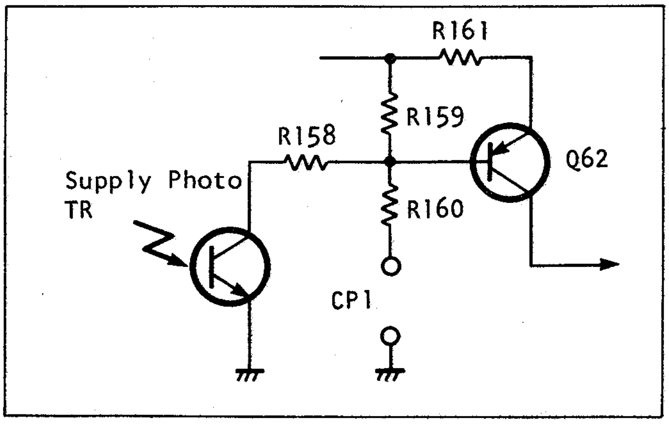
R161
R159
R158
Q62
Supply Photo TR
R160
CP1

Fig. 2

㊼ NV-8200

B. Takeup Photo TR

1. Under steps 1 - 4, push the REW key while pressing down the Tape Insertion Detect Lever.
2. Make sure that the Supply Reel Table does not rotate.
3. If it rotates, connect CP2 with a jumper.
4. Make sure to recheck step 2.

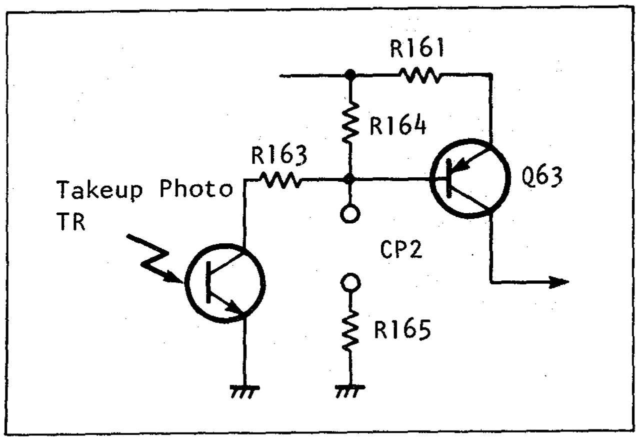
R161
R164
R163
Takeup Photo TR
Q63
CP2
R165

Fig. 3

3. +9VDC Adjustment [STOP mode]

Test Point : TP1 (Servo Board, VJB0293)

Adjustment : R4 (+9 V ADJ)

1. Connect a VTVM to TP1 on the Servo board.
2. Adjust the +9 V ADJ (R4) for 9.0 V ± 0.1 V.

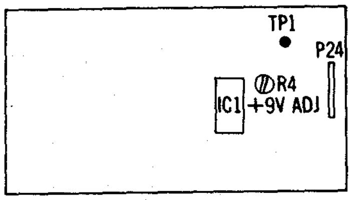
TP1
P24
R4
IC1
+9V ADJ

Fig. 4 Servo Board

4. Buffer OSC Frequency Adjustment

Test Point : TP11 Chroma Board, VJB0858

Adjustment : R25 (BUFFER OSC, Sub Servo Board)

1. Do not supply any video signal to the Video Input on the rear panel.
2. Connect the scope to TP11 on the Chroma board.

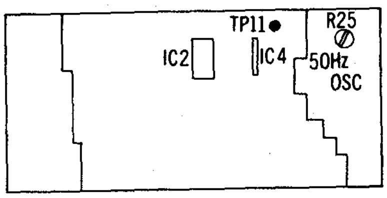
TP11
R25
IC2
IC4
50Hz
OSC

Fig. 5 Sub Servo Board

3. Insert a cassette and place the unit in the E-E mode. (Press the Rec key only.)
4. Adjust the BUFFER OSC (R25) on the Sub Servo board so that the period "T" is 21.05 msec ± 0.25 msec.
5. Supply a video signal to the Video Input on the rear panel and make sure that the "T" is changed to 20 msec (50 Hz).

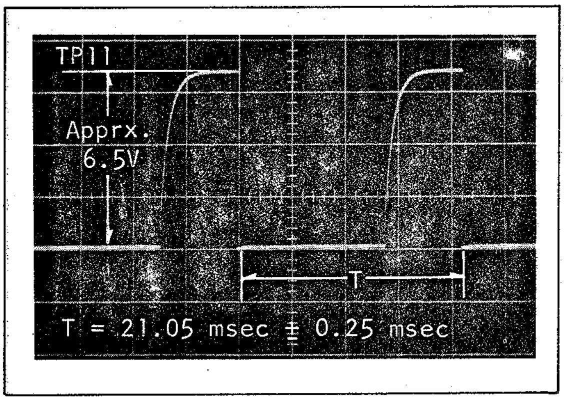

Fig. 6

5. Bias Oscillator Amplitude Adjustment

Test Point : TP5 (Servo Board, VJB0293)
Adjustment : R82 (OSC)

1. Supply a video signal to the Video Input on the rear panel.
2. Connect the scope to TP5 on the Servo board.
3. Insert a cassette and make a recording.
4. While recording is taking place, adjust the OSC (R82) on the same board so that the peak to peak level "V" is 0.33 Vp-p ± 0.02 Vp-p.

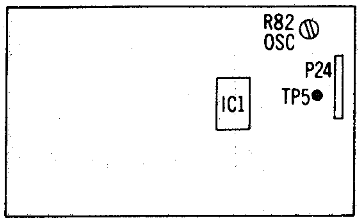

Fig. 7 Servo Board

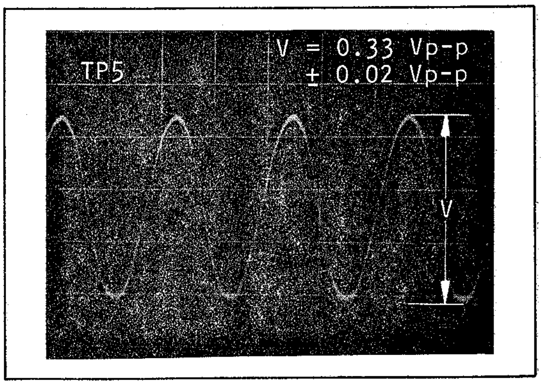

Fig. 8

㊾ NV 8200

6. Cylinder Servo Sampling Gate Adjustment

Test Points : TP2, TP3, TP4 (Servo Board, VJB0293)

Adjustment : R53 (CYLINDER FREE RUN)

1. Supply a video signal to the Video Input on the rear panel.
2. Connect the scope CH1 to TP3 and CH2 to TP2 both on the Servo board and set the scope to CHOP mode.
3. Insert a cassette and make a recording.
4. While recording is taking place, make sure that both signals are synchronized on the scope.

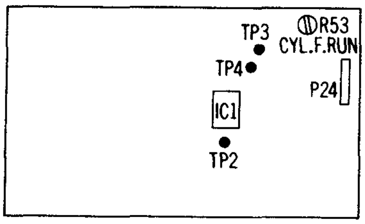

Fig. 9

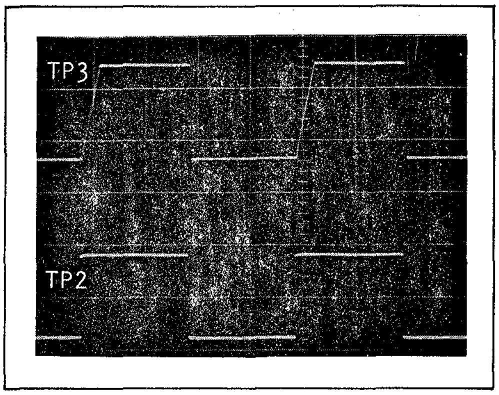

Fig. 10

5. If they are not synchronized on the scope, temporarily adjust the CYLINDER FREE RUN (R53) on the Servo board until they are locked.
6. Connect the VTVM to TP4 on the same board.
7. Adjust the CYLINDER FREE RUN (R53) so that the voltage is 3.6 V ± 0.2 V DC.

7. Capstan Servo Sampling Gate Adjustment

Test Points : TP9, TP10, TP11 (Servo Board, VJB0293)

Adjustment : R126 (CAPSTAN FREE RUN)

1. Supply a video signal to the Video Input on the rear panel.
2. Connect the scope CH1 to TP9 and CH2 to TP10 both on the Servo board and set the scope to ADD mode.
3. Insert a cassette and make a recording.

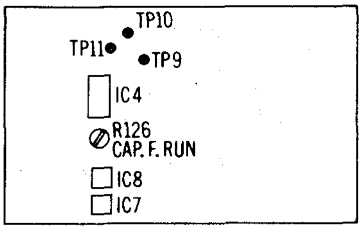

Fig. 11 Servo Board

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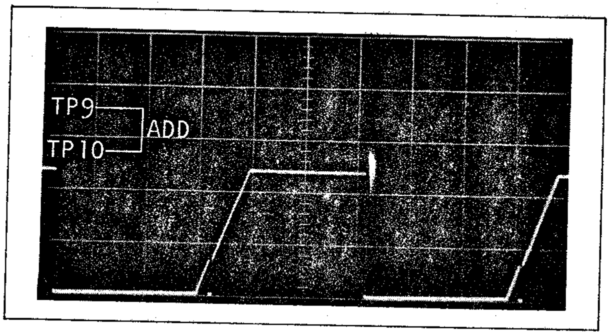

Fig. 12

4. While recording is taking place, make sure that the smapling pulses are locked on the trapezoidal waveform.

5. If the sampling pulses are not locked on the trapezoidal waveform, temporarily adjust the CAPSTAN FREE RUN (R126) on the Servo board until they are locked.
6. Connect the VTVM to TP11 on the same board.
7. Adjust the CAPSTAN FREE RUN (R126) so that the voltage is 5.0 V ± 0.2 V DC.

8. Switching Flip-Flop Duty Cycle Adjustment

Test Points : TP2, TP14 (Servo Board, VJB0293)
Adjustments : R25 (PG SHIFTER)
R27 (PG SHIFTER)

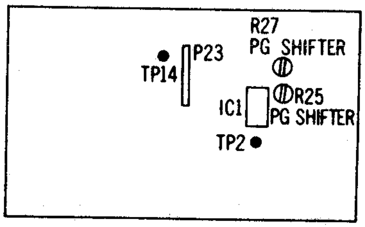

Fig. 13 Servo Board

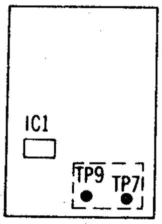

Fig. 14 Luminance Board

1. Connect a jumper between Tp7 and TP9 on the Luminance board.
2. Connect the scope CH1 to TP2 and CH2 to TP14 both on the Servo board. Use TP2 for trigger of scope.
3. Play back the monoscope section of alignment tape VFM8100H3D and set the scope to CHOP mode.
4. Set the triggering slope of scope to "-" side, and expand the switching portion of RF envelope.

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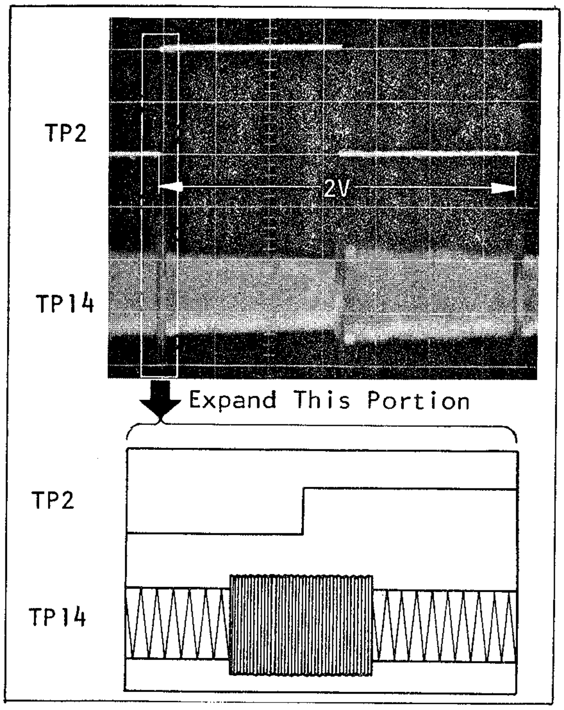
TP2
TP14
2V
Expand This Portion
TP2
TP14

Fig. 15

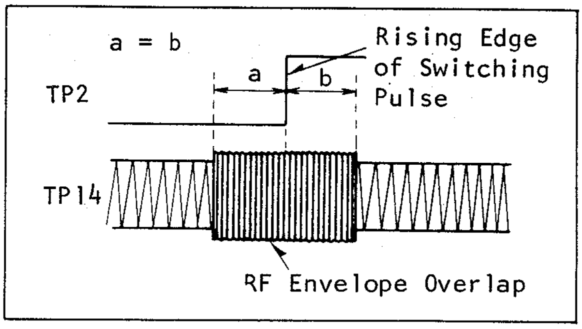
a = b
Rising Edge of Switching Pulse
a
b
TP2
TP14
RF Envelope Overlap

Fig. 16

5. Now adjust the PG SHIFTER (R27) on the Servo board to place the rising edge of switching pulse in the center of overlapped RF envelope.
6. Change the triggering slope of scope from "-" to "+" side and adjust the PG SHIFTER (R25) on the same board to place the falling edge of switching pulse in the center of overlapped RF envelope.

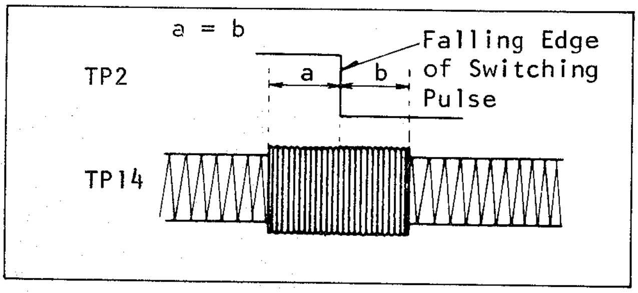
a = b
Falling Edge of Switching Pulse
TP2
a
b
TP14

Fig. 17

7. Remove the jumper.
8. Set the scope from CHOP to CH1.
9. Adjust the swithcing pulse duty cycle by the PG SHIFTER (R25) so that the difference is less than 10 µsec. Turn the control bit by bit for this adjustment.

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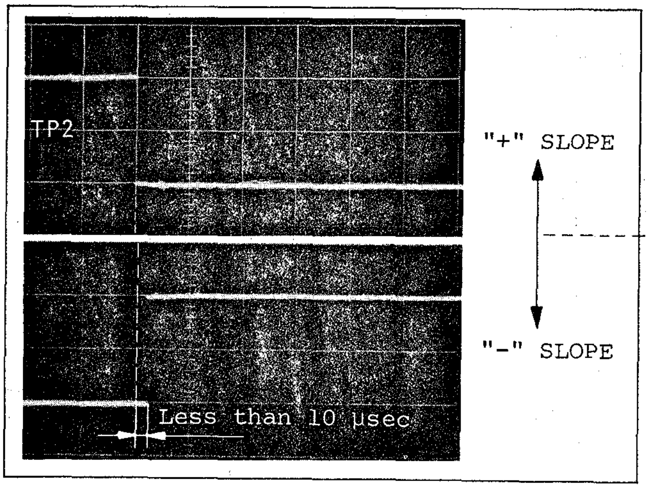
TP2
"+" SLOPE
"-" SLOPE
Less than 10 µsec

Alternately change the slope from "+" to "-" then "-" to "+" and read the difference of duty cycle.

Fig. 18

9. Head Switching Position Adjustment

Test Points : TP2 (Servo Board, VJB0293)
TP1 (Luminance Board, VJB0389)
Adjustment : R29 (REC SHIFTER, Servo Board)

1. Supply a video signal to the Video Input on the rear panel.
2. Connect the scope CH1 to TP2 on the Servo board and CH2 to TP1 on the Y board. Set the scope to CHOP mode and use TP2 for trigger of scope. ("+" slope of scope)
3. Insert a cassette and make a recording.
4. Expand the area of rising edge of switching pulse.
5. While recording is taking place, adjust the REC SHIFTER (R29) on the Servo board so that the recording head switching point is 6H ± 1H before the start of vertical sync as shown below.

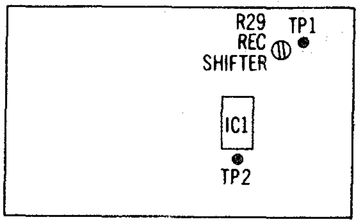
R29
REC
SHIFTER
TP1
IC1
TP2

Fig. 19 Servo Board

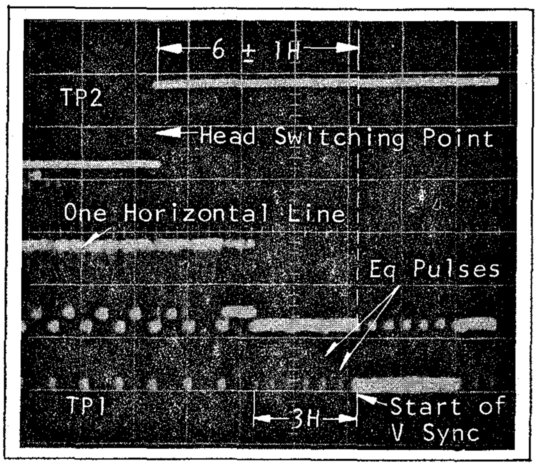
6 ± 1H
TP2
Head Switching Point
One Horizontal Line
Eq Pulses
TP1
3H
Start of V Sync

Fig. 20

6. Change the slope of scope from "+" to "-" and make sure that the other switching point is also 6H ± 1H before the start of vertical sync. If more or less than 6H ± 1H, readjust the Switching Flip-Flop Duty Cycle.

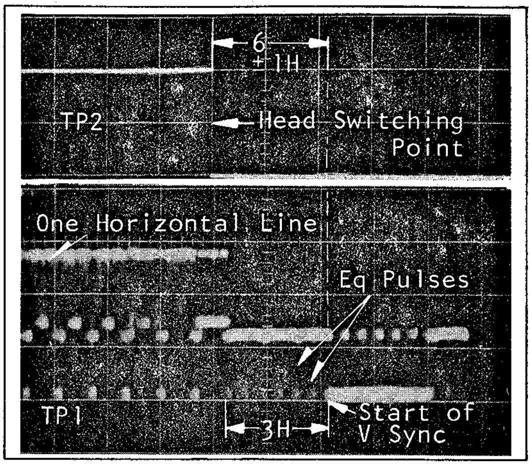
6
±1H
TP2
Head Switching
Point
One Horizontal Line
Eq Pulses
TP1
3H
Start of
V Sync

Fig. 21

10. Tracking Fix Adjustment

Test Points : TP2, TP8 (Servo Board, VJB0293)
Adjustments : R112 (TRACK FIX1)
R110 (TRACK FIX2)

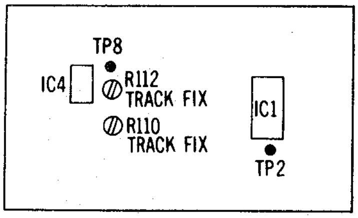
TP8
IC4
R112
TRACK FIX
R110
TRACK FIX
IC1
TP2

Fig. 22 Servo Board

1. Supply a video signal to the Video Input on the rear panel.
2. Connect the scope CH1 to TP2 and CH2 to TP8 both on the Servo Board. Set the scope to CHOP mode and use TP2 for trigger of the scope.
3. Set the Tracking Control on the front panel to the center detent position (FIX position).
4. Insert a cassette and make a recording for about 5 minutes. (The recorded signal is used not only in this item but also in the next item 11.)

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5. While recording is taking place, read the phase difference T between TP2 and TP8. The "T" value is used in the step 9.

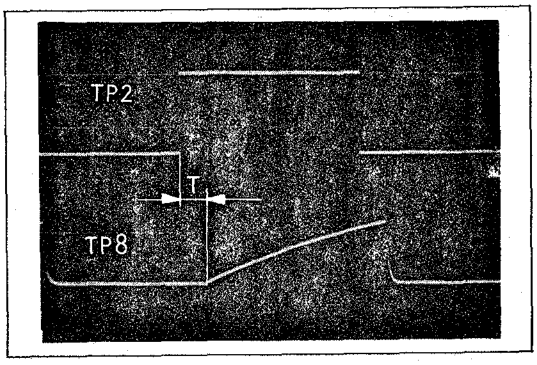

Fig. 23

6. Play back the portion just recorded in the X2 mode.
7. During X2 playback, adjust the TRACK FIX1 (R112) on the Servo board so that the phase difference T is as shown below.

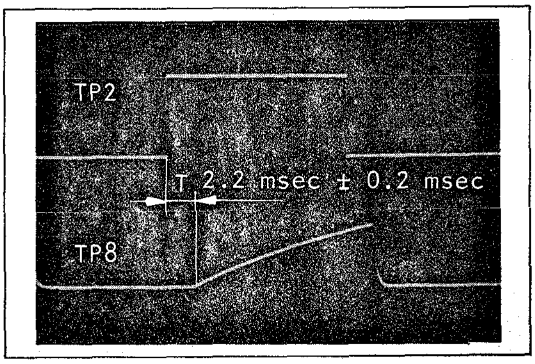

Fig. 24

8. Play back the same portion in the normal playback mode.
9. During normal playback, make sure that the phase difference T is equal to that of recording (T should be within 0.4 msec ± 0.4 msec).

   If it's not the same, make a recording again and adjust the TRACK FIX 2 (R110) so that the phase difference T becomes equal between record and playback.

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11. Still Pulse Width Adjustment/V Sync Phase Adjustment

Notes:

1. If you make the following adjustments A and B after item 10, Tracking Fix Adjustment, use the same portion recorded in step 4 of item 10.
2. If you make the following adjustments A and B only, record a video signal and use the portion for the following adjustments.

A. Still Pulse Width Adjustment

Test Point : TP13 (Servo Board, VJB0293)
Adjustment : R158 (STILL PULSE)

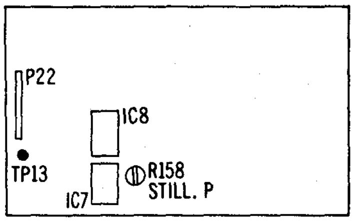

Fig. 25 Servo Board

1. Connect the scope to TP13 on the Servo board.
2. Play back the recorded portion and after stabilization of tape run, press the PAUSE/STILL key and set the unit to the STILL mode.
3. Adjust the SLOW PULSE (R158) on the same board so that the slow pulse width is 5.0 msec ± 0.2 msec.

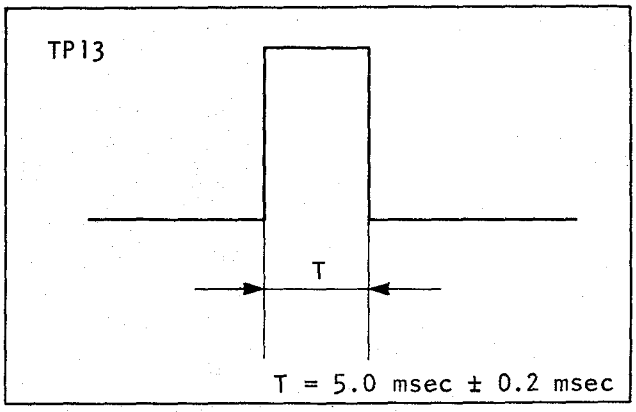

Fig. 26

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B. V Sync Phase Adjustment

Test Points : TP2 (Servo Board, VJB0293)
TP15 (Luminance Board, VJB0389)

Adjustments : R151 (V PULSE 3)
R162 (V PULSE 2)
R163 (V PULSE 1)

1. Connect the scope CH1 to TP2 on the Servo board and CH2 to TP15 on the Luminance board. Set the scope to CHOP mode and use TP2 for trigger of the scope.
2. Play back the recorded portion and after stabilization of tape run, press the PAUSE/STILL key and set the unit to the STILL mode.
3. Set the slope of scope to "+" side and expand the V sync area.
4. Adjust the V PULSE 2 (R162) on the Servo board so that t1 is 185 µsec ± 5 µsec.
5. Change the slope of scope from "+" to "-" and adjust the V PULSE 1 (R163) on the same board so that t2 is 280 µsec ± 5 µsec.
6. Adjust the V PULSE 3 (R151) on the same board so that t3 is 360 µsec ± 30 µsec.
7. If vertical jitter appears on a TV monitor, adjust the V PULSE 1 (R163) until the jitter is removed.

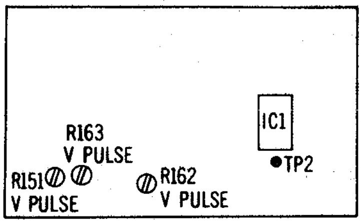

Fig. 27 Servo Board

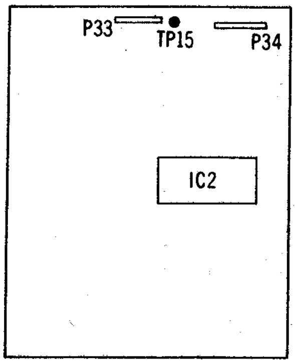

Fig. 28 Luminance Board

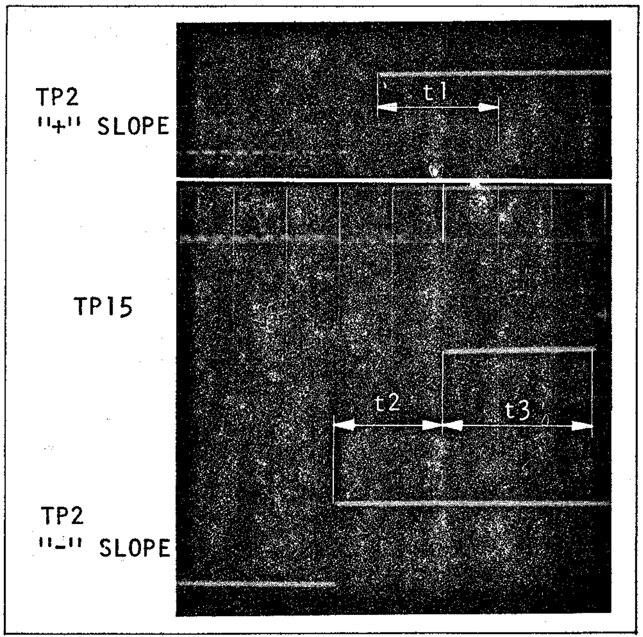

Fig. 29

12. Slow Tape Speed Adjustment

Test Point : TP7 (Servo Board, VJB0293)

Adjustment : R6 (SLOW, Sub Servo Board, VJB0858)

1. Connect a frequency counter ot TP7 on the Servo board.
2. Play back the alignment tape VFM8100H3D and press the SLOW/FAST key.
3. Turn the Tape Speed Control on the front panel fully counter-clockwise.
4. Adjust the SLOW (R6) on the Sub Servo board so that the counter reading is 150 Hz $^{+5}_{-0}$ Hz.

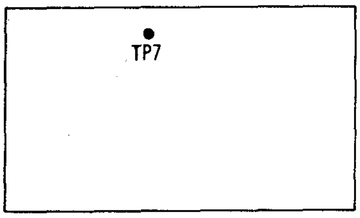

Fig. 30 Servo Board

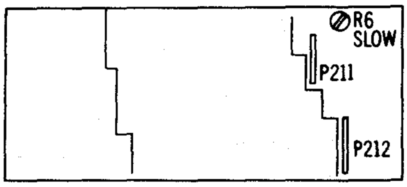
R6
SLOW
P211
P212

Fig. 31 Sub Servo Board

13. AFC Adjustment

Test Points : TP12 (Chroma Board, VJB0858)

Adjustment : R44 (AFC)

1. Supply a video signal to the Video Input on the rear panel.
2. Connect the scope CH1 to TP12 on the Chroma board.
3. Place the unit in the Rec mode.
4. Adjust the AFC (R44) on the same board so that the DC level at TP12 is as shown below.

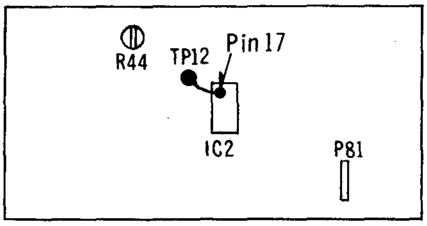
R44
TP12
Pin17
IC2
P81

Fig. 32

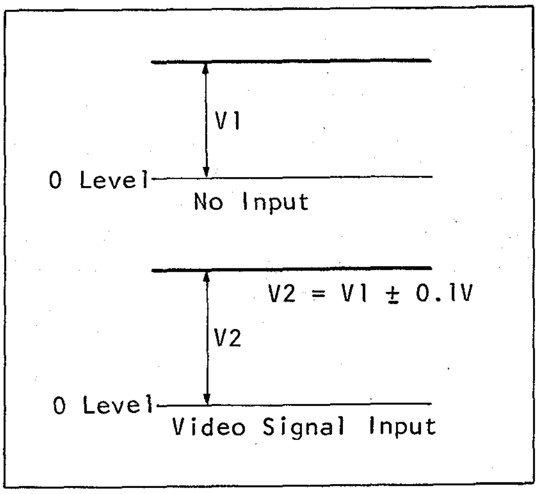
V1
0 Level
No Input
V2 = V1 ± 0.1V
V2
0 Level
Video Signal Input

Fig. 33

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5. Make sure that the trapezoid wave at TP12 is as shown below

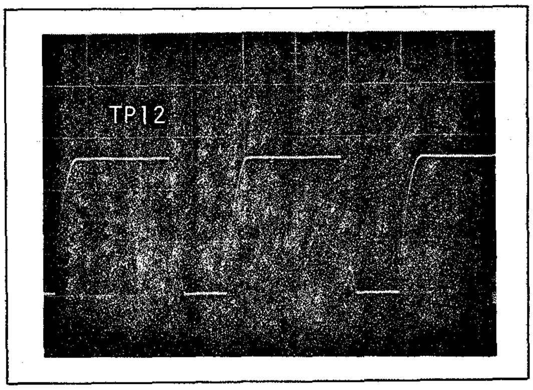

Fig. 34

14. 4.43 MHz Crystal Oscillator Adjustment [STOP mode]

Test Point : TP8 (Chroma Board, VJB0858)

Adjustment : C18 (3.58 MHZ FREQ)

1. Connect the frequency counter to TP8 on the Chroma board.
2. Adjust the 4.43 MHZ FREQ (C18) on the same baord so that the frequency at TP8 is 4.433619 MHz ± 5 Hz.

15. APC 4.43 MHz VXO Adjustment

Test Point : TP7 (Chroma Board, VJB0858)

Adjustment : C46 (APC)

1. Supply a video signal to the Video Input on the rear panel.
2. Connect a jumper between TP4 and Ground on the Chroma board.
3. Connect the frequency counter to TP7 on the same board.
4. Place the unit in the Rec mode.
5. Adjust the APC (C46) on the same board so that the frequency at TP7 is 4.435572 MHz ± 10 Hz.
6. Remove the jumper.

16. Color Killer Adjustment

Test Point : TP14 (Chroma Board, VJB0858)

Adjustment : R71 (KILLER)

1. Connect a 47 Ω resistor between TP15 on the chroma board and ground to reduce the chroma input level.
2. Supply a color bar signal to the Video Input on the rear panel.

3. Connect the scope to TP14 on the same board.
4. Set the scope to the DC mode.
5. Place the unit in the E-E mode.
6. Turn the KILLER (R71) on the same board fully counterclockwise.
7. Turn the KILLER (R71) clockwise until the DC level on the scope is changed from Low to High.

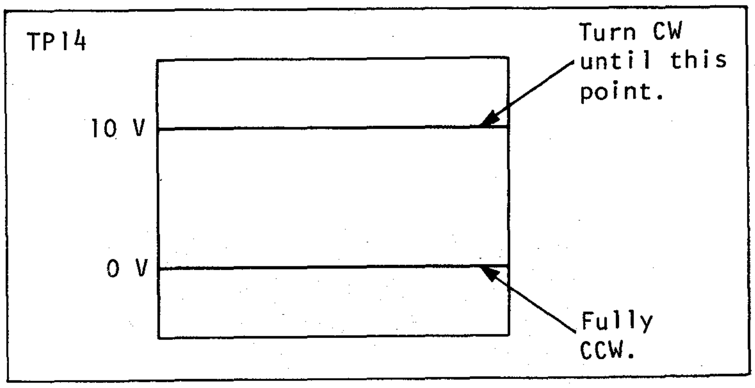
TP14
10 V
0 V
Turn CW until this point.
Fully CCW.

Fig. 35

8. Change the input signal from color bar to B/W signal and make sure that the DC voltage is Low.
9. Remove the resistor.

17. Head Amp Peak Frequency Adjustment

Test Point : TP6 (Luminance Board, VJB0389)

Adjustment : C47 (PEAK-A)
C50 (PEAK-B)
R73 (Q - A)
R78 (Q - B)

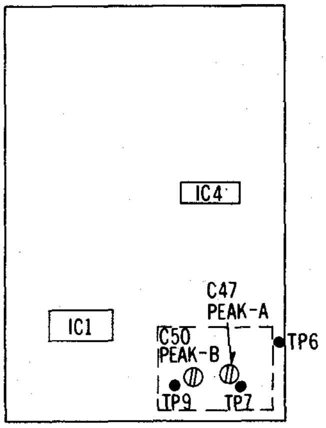
IC4
IC1
C47
PEAK-A
C50
PEAK-B
TP6
TP9
TP7

Fig. 36 Luminance Board

1. Connect a sweep generator to TP6 on the Luminance board.
2. Remove the Cassette Compartment Cover and press down the Cassette Compartment.

3. Blind the Sensor Lamp with black paper and press down the Cassette Insertion Detect Lever and keep the position by a piece of adhesive tape.
4. Connect the scope to TP6 on the Luminance board.
5. Turn the RF Level (R80) fully clockwise.
6. Press the PLAY key then the PLAY operation can be performed without a tape.
7. Adjust C47 (Peak-A) and C50 (Peak-B) so that the Peaks on the oscilloscope becomes 4.9 ± 0.1 MHz.
8. Adjust R73 (Q-A) and R78 (Q-B) so that the level at 4.9 MHz becomes 3 times bigger than level at 2 MHz.

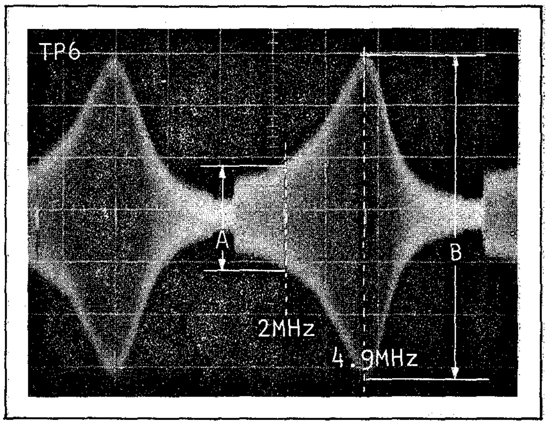

Fig. 37

18. Rec Amp Frequency Response Confirmation
    Test Point : TP9, TP10 (Luminance Board, VJB0389)
    1. Supply the CCIR monoscope pattern signal to Video Input on the rear panel.
    2. Connect a jumper wire between TP3 and ground.
    3. Connect the sweep generator to TP4 and put the marker on 1 MHz, 2 MHz and 3.8 MHz.
    4. Connect the oscilloscope between TP9 (Hot) and TP10 (GND) on the same board and place in Rec mode.
    5. Set the output of sweep generator to 130 mVp-p at 3.8 MHz.
    6. Place the unit in Rec mode and make recording a few minutes.
    7. Make sure that the output waveform becomes as shown in Fig. 38.

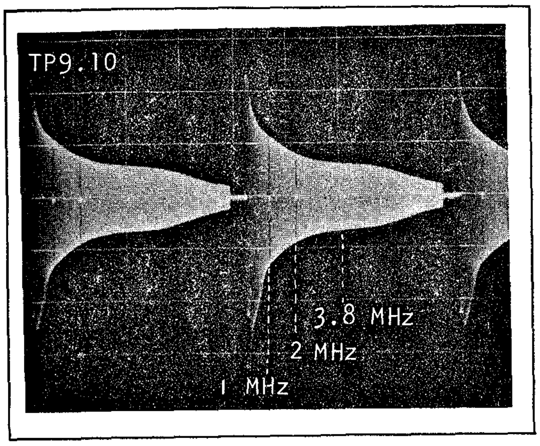
TP9.10
3.8 MHz
2 MHz
1 MHz

Fig. 38

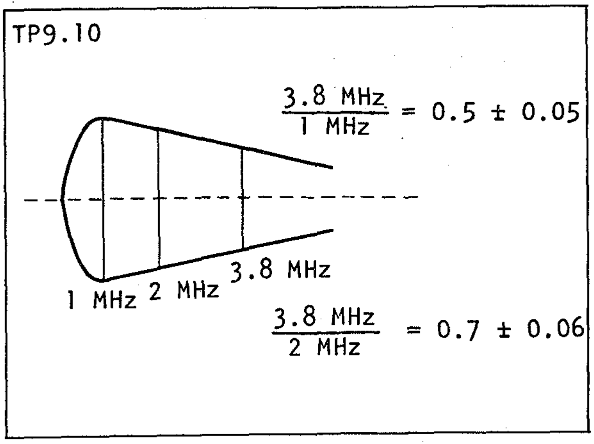
TP9.10
3.8 MHz / 1 MHz = 0.5 ± 0.05
1 MHz
2 MHz
3.8 MHz
3.8 MHz / 2 MHz = 0.7 ± 0.06

Fig. 39

19. Head Amp Frequency Response and Mix Balance Adjustment

Test Point : TP6 (Luminance Board, VJB0389)

Adjustment : R73 (Q - A)
R78 (Q - B)
R75 (Mix)

1. Set Mix (R75) to center portion.
2. Connect the oscilloscope to TP6.
3. Play back the portion just recorded in item 19 (Rec Amp Frequency Response Confirmation).
4. Adjust Mix (R75) so that both the levels at 2 MHz become equal as shown Fig. 40.
5. Adjust Q-A (R73) and Q-B (R78) so that both the levels at peak frequency becomes 2 times bigger than the level at 2 MHz as shown in Fig. 41.

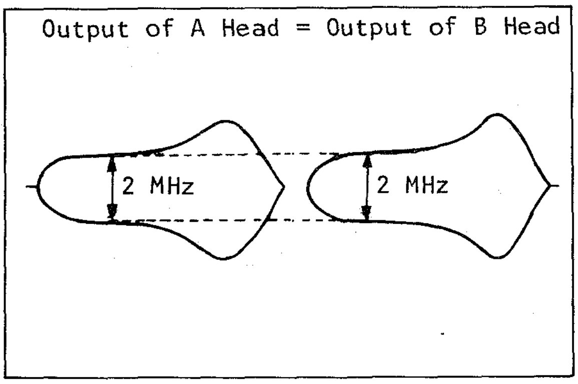
Output of A Head = Output of B Head
2 MHz
2 MHz

Fig. 40

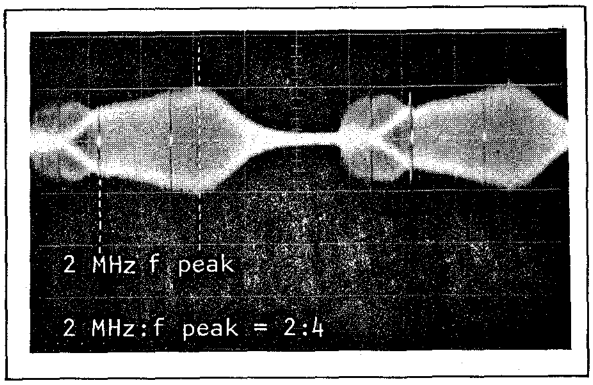
2 MHz f peak
2 MHz:f peak = 2:4

Fig. 41

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20. Head Amp Output Level Adjustment

Test Point : TP11

Adjustment : R80

1. Supply a colour bar signal to Video Input on the rear panel.
2. Insert te cassette tape and make a recording for a few minutes.
3. Connect the oscilloscope to TP11.
4. Play back the recorded portion.
5. Adjust RF level (R80) so that the level becomes 0.9 Vp-p ± 0.05 Vp-p.

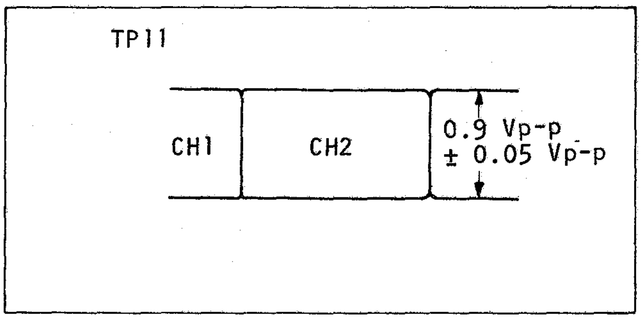

Fig. 42

21. E-E Level Adjustment [STOP mode]

Test Point : Video Out on the rear panel

Adjustment : R4 (E-E, Luminance Board, VJB0389)

1. Supply a color bar signal to the Video Input on the rear panel.
2. Connect a 75 Ω resistor between Video out terminal on the rear panel and ground.
3. Connect the scope to Video out terminal on the rear panel.
4. Adjust the E-E (R4) on the same board for 1.0 Vp-p ± 0.05 Vp-p.

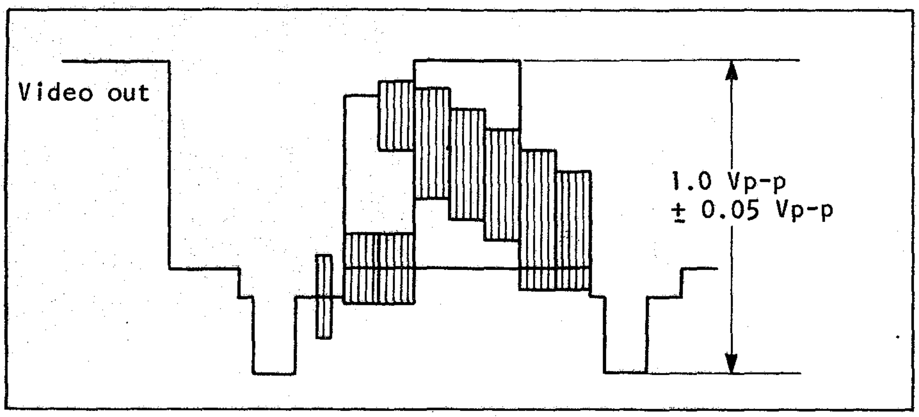

Fig. 43

22. Sync Tip Frequency and Deviation Adjustment

Test Points : TP4, TP14, TP15 (Luminance Board, VJB00389)

Adjustment : C22 (SYNC TIP FREQ)

R14 (DEV)

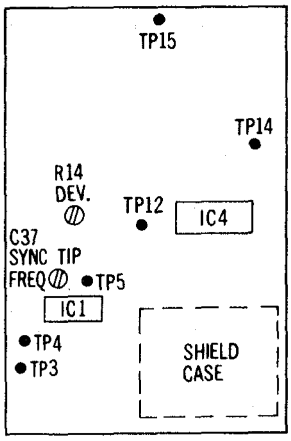
TP15
TP14
R14
DEV.
TP12
IC4
C37
SYNC TIP
FREQ
TP5
IC1
TP4
TP3
SHIELD
CASE

Fig. 44 Luminance Board

A. Sync Tip Frequency Adjustment

1. Do not supply any video signal to the Video Input on the rear panel.
2. Connect the frequency counter to TP4 on the Luminance board.
3. Insert a cassette and make a recording without connecting any video signal.
4. During recording, adjust the SYNC TIP FREQ (C22) on the same board so that the frequency on TP4 is 3.8 MHz ± 0.05 MHZ.

B. Deviaition Adjustment

Method 1

1. Supply a color bar signal which contains 100 % white to the Video Input on the rear panel.
2. Connect the scope to Pin 16 of IC1 on the Luminance baord.
3. Insert a cassette and make a recording.
4. During recording, adjust the DEV (R14) on the same baord so that the peak-to-peak level is 400 mVp-p ± 10 mVp-p.

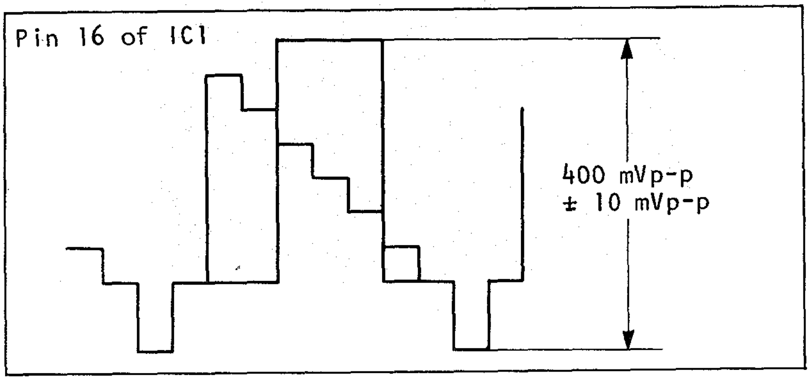
Pin 16 of IC1
400 mVp-p
± 10 mVp-p

Fig. 45

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5. Then record the signal for a few minutes.
6. Connect the scope to TP15 on the same board.
7. Play back the portion just recorded.
8. Make sure that the peak-to-peak level on TP15 is 2.0 Vp-p ± 0.1 Vp-p.

Method 2

1. Supply a color bar signal which contains 100 % white to the Video Input on the rear panel.
2. Connect the scope to TP14 on the Luminance board.
3. Connect the sweep generator, 4.8 MHz ± 0.05 MHz, to TP4 and TP12 as shown in Fig. 46.

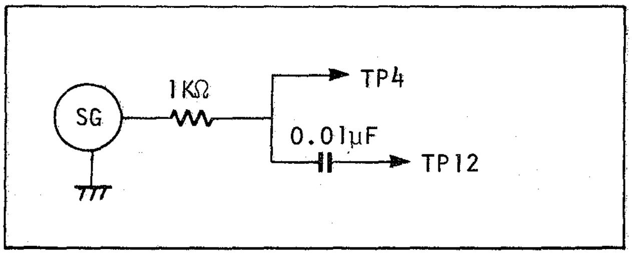

Fig. 46

5. Place the unit in the E-E mode.
6. During E-E mode, adjust the DEV (R14) on the same board so that the beat level of the white portion is minimum.

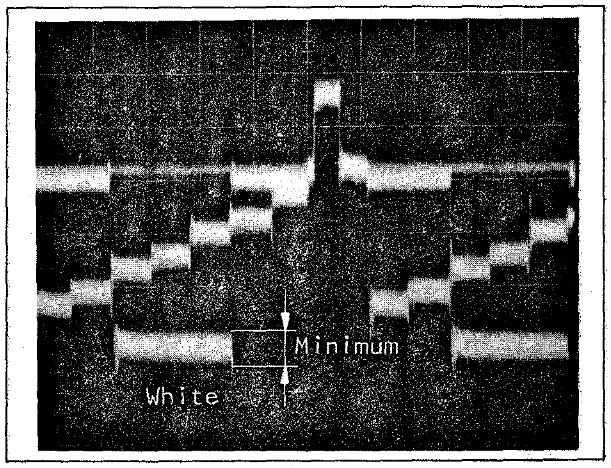

Fig. 47

23. Record Current Adjustment

Test Points : TP9, TP10 (Luminance Board, VJB0389)

Adjustment : R31 (REC FM)

R47 (REC CHROMA)

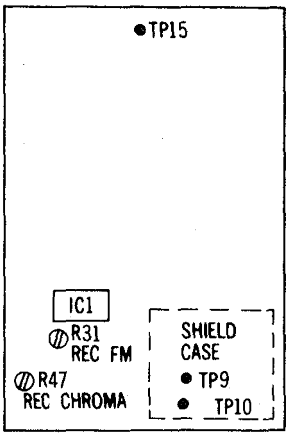

Fig. 48 Luminance Board

1. Supply a color bar signal to the Video Input on the rear panel.
2. Connect the scope to TP9 (hot) and TP10 (GND) both on the Luminance board.
3. Turn the REC FM (R31) on the same board fully CCW.
4. Insert a cassette and make a recording.
5. During recording, adjust the REC CHROMA (R47) so that the cyan portion of chroma signal is 28 mVp-p.

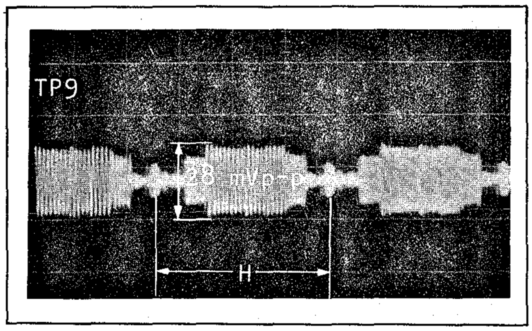

Fig. 49

6. Gradually turn the REC FM (R31) CW until the V sync portion of FM signal is 130 mVp-p.

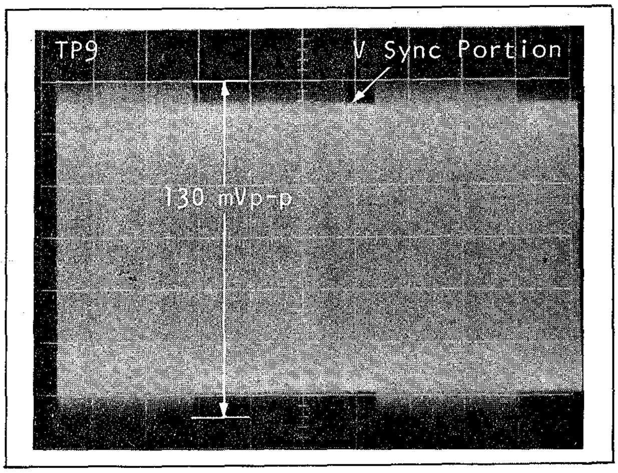

Fig. 50

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24. White and Dark Clip Adjustment

Test Point : TP2 (Luminance Board, VJB0389)
Adjustment : R25 (WHITE CLIP)
R29 (DARK CLIP)

1. Supply a color bar signal which contains 100 % white to the Video Input on the rear panel.
2. Connect the scope to TP2 on the Luminance board.
3. Insert a cassette and make a recording.
4. During recording, adjust the WHITE CLIP (R25) and the DARK CLIP (R29) on the same board so that the overshoot and undershoot are as shown below.

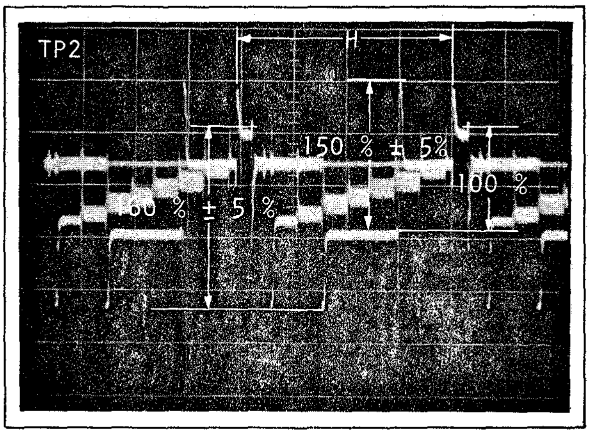

Fig. 51

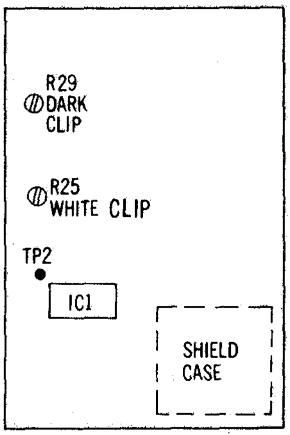

Fig. 52 Luminance Board

25. Limiter Balance Adjustment

Test Point : TP14 (Luminance Board, VJB0389)
Adjustment : R103 (Bal.1)

1. Supply a colour Bar signal to the Video Input on the rear panel and make a recording for a few minutes.
2. Connect a jumper wire between TP13 and ground.
3. Connect an oscilloscope to TP14.
4. Play back the recorded portion.
5. Adjust the Bal. 1 (R103) for minimum carrier at sync tip portion.

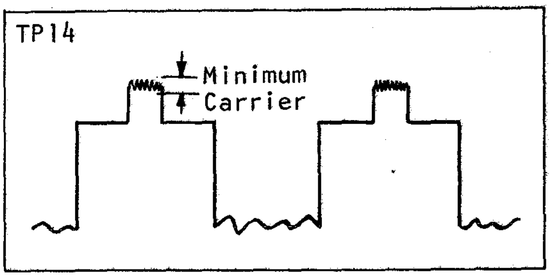

Fig. 53

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26. Double Limiter Balance Adjustment

Test Point : TP14 (Luminance Board, VJB0389)

Adjustment : R115 (Bal. 2)

1. Supply a colour bar signal to Video Input on the rear panel and make a recording for a few minute.
2. Connect a jumper wire between TP12 and ground.
3. Connect an oscilloscope to TP14.
4. Adjust the Bal. 2 (R115) so that the carrier leakage at pedestal portion becomes a minimum as shown in Fig. 54.

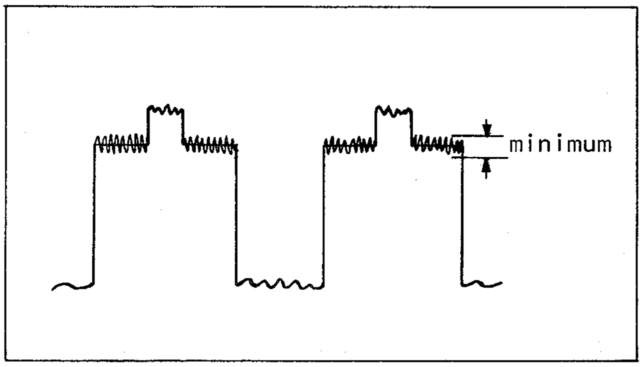

Fig. 54

27. Video P.B Frequency Response Adjustment

Test Point : TP15 (Luminance Board, VJB0389)

Adjustment : R147 (P.B Freq.)

1. Set the output level of sweep generator as shown in Fig. 55. And put the marker on 0.1 MHz and 2 MHz.

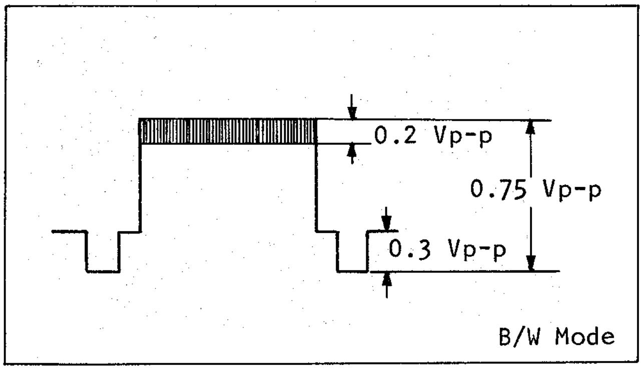

Fig. 55

2. Supply this signal to Video In on the rear panel and make recording a few minutes.
3. Play back the portion just recorded in item 2.
4. Adjust P.B Freq (R147) so that the level at 0.1 MHz becomes 0 dB ± 2 dB against the level at 2 MHz.

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28. Video/Chroma Level Adjustment

Test Point : Video Out (BNC)
Adjustment : R187 (PB CHROMA, Luminance Board)
R141 (V-V, Luminance Board)

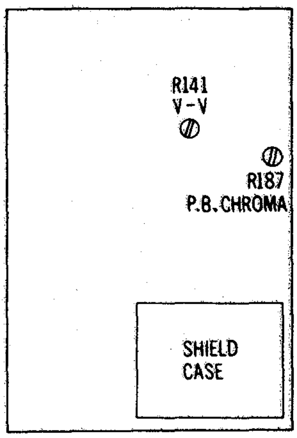

Fig. 56 Luminance Board

1. Supply a color bar signal which contains 100 % white to the Video Input on the rear panel.
2. Connect the scope to Video Out (BNC) on the rear panel.
3. Insert a cassette and make a recording for a few minutes.
4. Play back the portion just recorded.
5. During playback, adjust the V-V (R141) on the Luminance board so that the output level is 2.0 Vp-p ± 0.1 Vp-p.
6. Then adjust the PB CHROMA (R187) on the same board so that the cyan portion of color signal is 1.1 Vp-p ± 0.04 Vp-p.

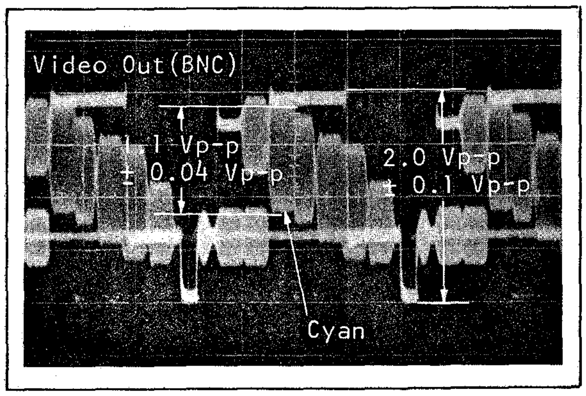

Fig. 57

29. Audio Bias Trap Adjustment

Test Point : TP1 (Chroma Board, VJB0858)

Adjustment : T1 (65 KHZ TRAP, Luminance Board, VJB0389)

1. Remove the Cassette Compartment Cover.
2. Press down the Cassette Compartment without a tape.
3. Press down the Cassette Insertion Detect Lever and keep the position by a piece of adhesive tape.
4. Press the Mis-erase Prevention Lever and keep the position by a piece of adhesive tape.
5. Blind the Sensor Lamp.
6. Press the AUDIO DUB and PLAY keys simultaneously to place the unit into the Audio Dub mode.
7. Connect the scope to TP1 on the Chroma board, observe at V rate.
8. Adjust the 65 kHz TRAP (T1) on the Luminance board so that the audio erase bias leakage becomes minimum.

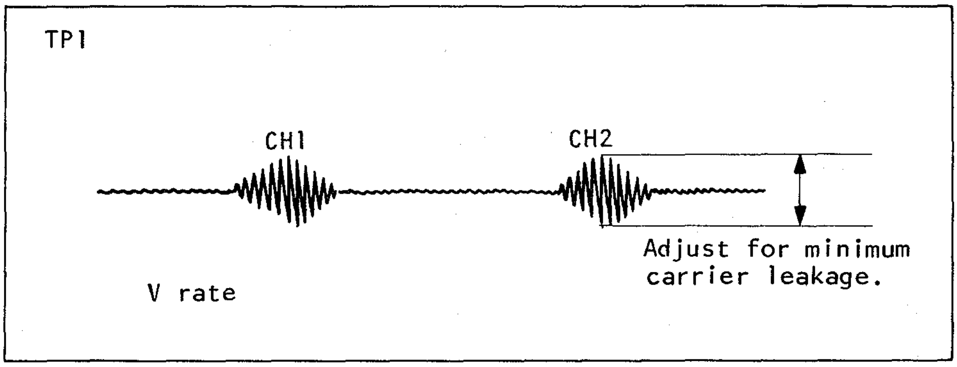

Fig. 58

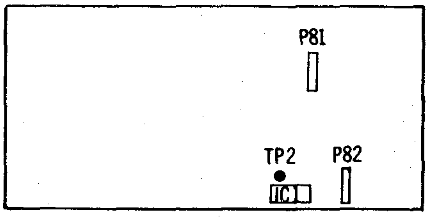

Fig. 59 Chroma Board

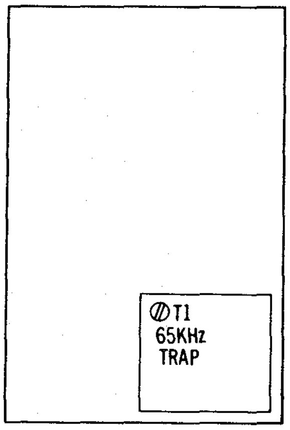

Fig. 60 Luminance Board

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30. Audio Playback Gain and Frequency Response Adjustment

Test Points : TP1, TP3 (Audio Board)

Adjustment : R31 (CH1 PB EQ)

R32 (CH1 PB GAIN)

R111 (CH2 PB EQ)

R112 (CH2 PB GAIN)

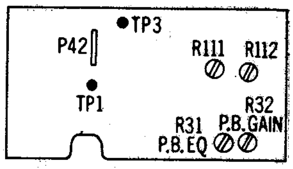
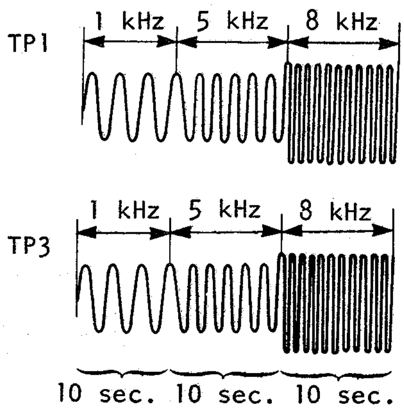


Fig. 61 Audio Board

1. Supply a video signal to the Video Input on the rear panel for the servo operation of the unit.
2. Set the output of signal generator to 0.1 Vrms (when the SCOPE is used for measuring the output level, it is 0.1 x $2\sqrt{2}$ = 0.28 Vp-p) at 1 kHz.
3. Connect the signal generator to the Audio Inputs CH1 and CH2.
4. Connect the scope CH1 to TP1 and CH2 to TP3 both on the Audio board.
5. Adjust the Audio Recording Level Controls, inner control for CH1 and outer control for CH2, so that the peak to peak levels are 1.4 Vp-p ± 0.1 Vp-p.
6. Insert a cassette and record the 1 kHz sinewave signal for 10 seconds.
7. During recording, change the frequency from 1 kHz to 5 kHz and then 8 kHz each for 10 seconds.
8. Repeat above steps 6 and 7 for a couple of times.
9. Play back the portion just recorded.
10. During playback, adjust the CH1 PB EQ (R31) and CH2 PB EQ (R111) both on the Audio board so that the output levels at 1 kHz 5 kHz become equal.



Adjust the CH1 PB EQ (R31) for equal output levels between 1 kHz and 5 kHz.

Adjust the CH2 PB EQ (R111) for equal output levels between 1 kHz and 5 kHz.

Fig. 62

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11. Then adjust the CH1 PB GAIN (R32) and CH2 PB GAIN (R112) both on the same board so that the output levels at 1 kHz are 1.4 Vp-p ±0.2 Vp-p.
12. Make sure that the output level at 8 kHz is 1.4 Vp-p ± 0.5 Vp-p.

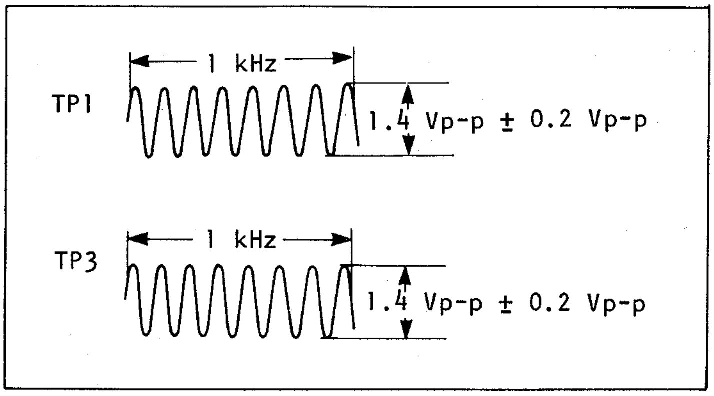

Fig. 63

31. Audio Level Meter Adjustment [STOP mode]

Test Points : TP1, TP3 (Audio Board)
Adjustment : R72 (CH1 METER)
R151 (CH2 METER)

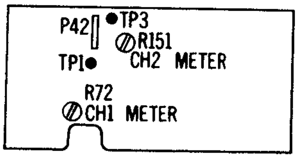

Fig. 64 Audio Board

1. Supply a sinewave signal (1 kHz, 0,3 Vrms = 0.84 Vp-p) to the Audio Inputs CH1 and CH2 on the rear panel.
2. Set the Dolby and the Limiter switches off.
3. Connect the scope to TP1 on the Audio board.
4. Adjust the Audio Recording Level Control, CH1 (inner knob) so that the peak to peak level on TP1 is 1.4 Vp-p ± 0.1 Vp-p.
5. Adjust the CH1 METER (R72) on the same board so that the white pointer of Audio Recording Level Meter, CH1 (Left) indicates 0 dB.
6. Connect the scope to TP3 on the same board.
7. Adjust the Audio Recording Level Control, CH2 (outer knob) so that the peak to peak level on TP3 is 1.4 Vp-p ± 0.1 Vp-p.
8. Adjust the CH2 METER (R151) on the same board so that the white pointer of Audio Recording Level Meter, CH2 (Right) indicates 0 dB.

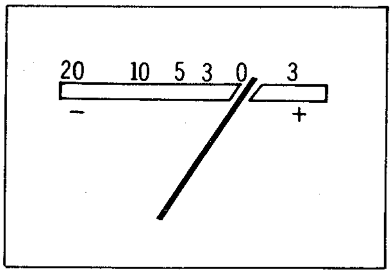

Fig. 65

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32. Audio Bias Current Adjustment

Test Points : Test Pins on A/C Head Board
Adjustment : C77 (CH1 BIAS ADJ)
C76 (CH2 BIAS ADJ)
L8 (A.D. BIAS ADJ)

CAUTION: When you make the following adjustment, be careful not to touch the Video Head Disc and the Capstan Motor Fan.

1. Do not supply any audio signal to the Audio Inputs on the rear panel.
2. Connect a VTVM to the test pins on the A/C Head board as shown below.

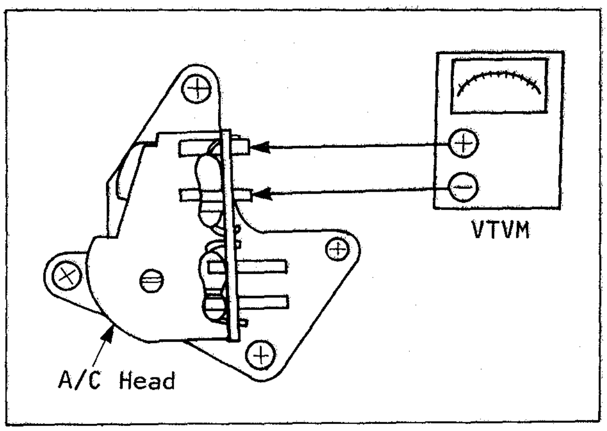

Fig. 66

3. Set the Dolby switch off.
4. Insert a cassette and place the unit into the Record mode and run the tape.
5. During recording, adjust the CH1 BIAS ADJ (C77) on the Audio board for 1.2 mVrms ± 0.05 mVrms.
6. Connect the VTVM to the test pins on the A/C Head board as shown below.

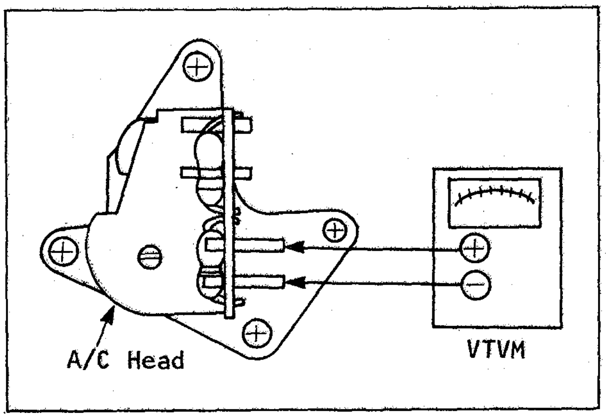

Fig. 67

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7. Adjust the CH2 BIAS ADJ (C76) on the Audio board for 1.2 mVrms ± 0.05 mVrms. Do not disconnect the VTVM.
8. Place the unit into the Audio Dub mode.
9. Adjust the A.D. BIAS ADJ (L8) for 1.2 mVp-p ± 0.05 mVp-p.

33. Crosstalk Canceller Adjustment

Test Point : TP1 (Audio Board)
Adjustment : R133 (CROSSTALK CANCEL)

1. Supply a sinewave signal (1 kHz, 0.3 Vrms = 0.84 Vp-p) to the Audio CH2 Input on the rear panel. Do not supply any audio signal to the Audio CH1 Input.
2. Set the Dolby and the limiter switches off.
3. Adjust the Audio Recording Level Control, CH2 on the front panel so that the white pointer indicates 0 dB.
4. Connect the scope to TP1 on the Audio board.
5. Insert a cassette and place the unit into the Audio Dub mode and run the tape.
6. During audio dubbing, adjust the CROSSTALK CANCEL (R133) on the Audio board so that the 1 kHz sinewave leakage form CH2 becomes minimum.

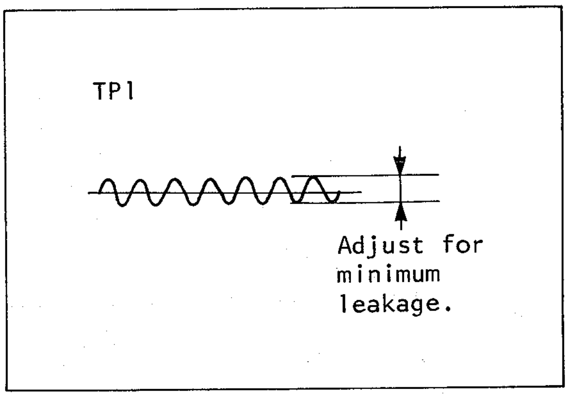

Fig. 68

34. Audio Record Current Adjustment

Test Points : TP1, TP3 (Audio Board)
R68 (CH1 REC CUR)
R147 (CH2 REC CUR)

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1. Supply a video signal to the Video Input on the rear panel for the servo operation of the unit.
2. Supply a sinewave signal (1 kHz, 0,3 Vrms = 0.84 Vp-p) to the Audio Inputs CH1 and CH2 on the rear panel.
3. Set the Dolby switch off.
4. Connect the scope CH1 to TP1 and CH2 to TP3 both on the A baord.
5. Adjust the Audio Recording Level Controls CH1 and CH2 on the front panel so that the peak to peak levels are 1.4 Vp-p ± 0.1 Vp-p.
6. Insert a cassette and make a recoding.
7. Play back the portion just recorded.
8. Confirm that the playback levels on TP1 and TP3 are 1.4 Vp-p ± 0.1 Vp-p. If not, place the unit into the Record mode and lsightly turn the CH1 REC CUR (R68) and/or CH2 REC CUR (R147) both on the Audio board CW or CCW.
9. Repeat steps 5, 6 and 7 until the peak to peak levels becomes 1.4 Vp-p ± 0.1 Vp-p.

NOTES: 1. If you turn the CH1 REC CUR (R68) CW, the CH1 playback level becomes bigger.
2. If you turn the CH2 REC CUR (R147) CCW, the CH2 playback level becomes bigger.
3. This procedure must be repeated several times for optimum results.

CH1 REC CUR (R68)		CH2 REC CUR (R147)	
Turnign Direction	Output Level	Turning Direction	Output Level
Rec Mode	PB Mode	Rec Mode	PB Mode
CW	Bigger	CW	Smaller
CCW	Smaller	CCW	Bigger

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35. H Trap Adjustment

Test Point : TP1, TP3 (Audio Board, VJB0456)

Adjustment : FL1 (H Trap, Dolby Board, VJB0455)
FL2 (H Trap Dolby Board, VJB0455)

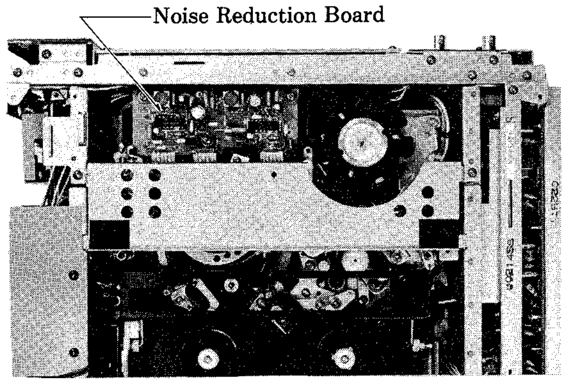
1. Supply a sinewave signal (15.625 kHz, 0,84 Vp-p) to Audio Inputs CH1 and CH2 on the rear panel.
2. Connect the scope to TP1.
3. Adjust the H Trap (FL1) so that the level at 15.625 kHz becomes minimum.
4. Connect the scope to TP3.
5. Adjust the H Trap (FL2) so that the level at 15.625 kHz becomes minimum.

MEMO

Circuit Board Location C

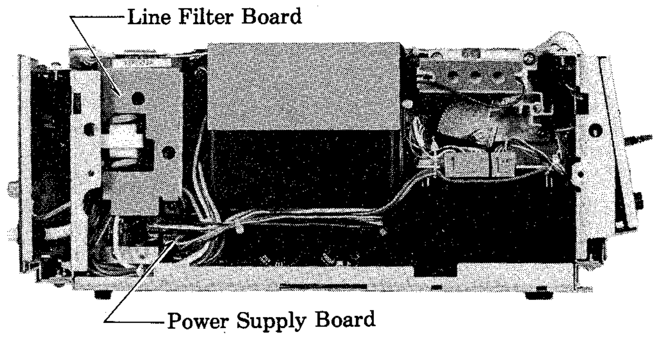
Noise Reduction Board

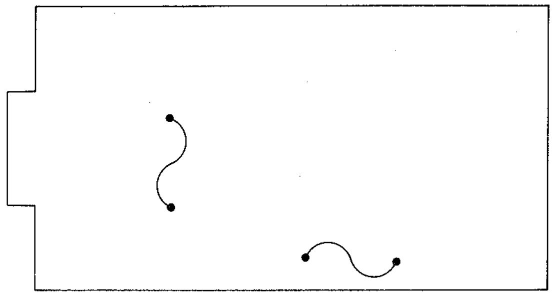
VJB0455


Noise Reduction Board

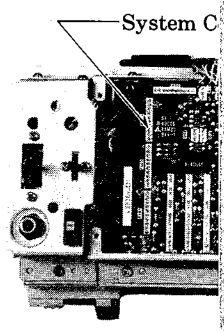
Power & Line Filter Board

VJB0167/0175


Line Filter Board
Power Supply Board

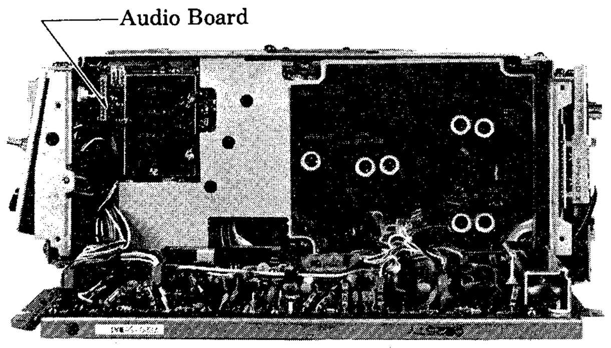


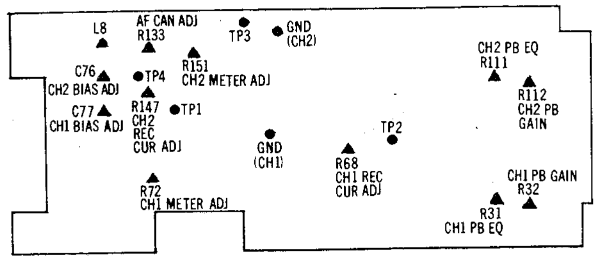
Sys



Audio Board

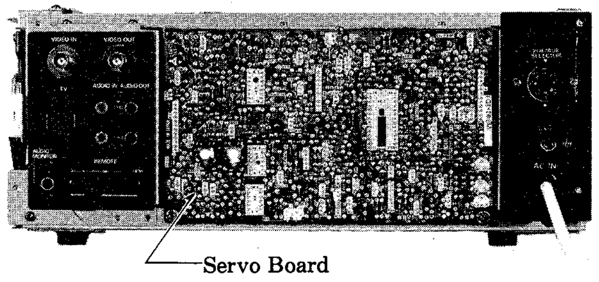
VJB0451

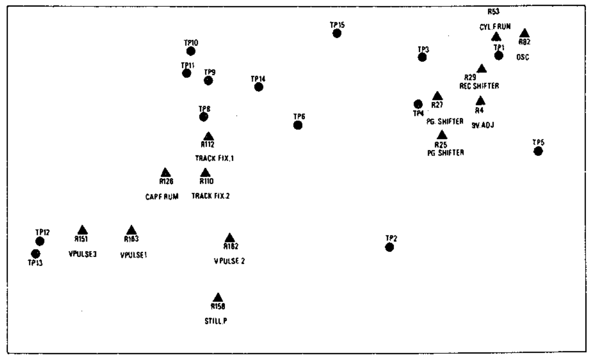

Audio Board

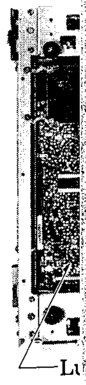

L8
AF CAN ADJ
R133
TP3
GND
(CH2)
C76
CH2 BIAS ADJ
TP4
R151
CH2 METER ADJ
C77
CH1 BIAS ADJ
R147
CH2
REC
CUR ADJ
TP1
GND
(CH1)
R68
CH1 REC
CUR ADJ
TP2
R72
CH1 METER ADJ
CH2 PB EQ
R111
R112
CH2 PB
GAIN
CH1 PB GAIN
R32
R31
CH1 PB EQ

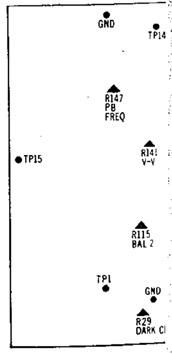
Servo 1 Board

VJB0293


Servo Board


TP15
R53
CYL.F.RUN
R82
TP1
OSC
TP3
TP10
TP11
TP9
TP14
R29
REC SHIFTER
TP4
R27
PG. SHIFTER
R4
9V.ADJ
TP8
TP6
R25
PG SHIFTER
TP5
R112
TRACK FIX.1
R126
CAPF RUM
R110
TRACK FIX.2
TP12
TP13
R151
VPULSE3
R163
VPULSE1
R162
V PULSE 2
TP2
R158
STILL.P




GND
TP14
R147
PB
FREQ
TP15
R14
V-V
R115
BAL 2
TP1
GND
R29
DARK C

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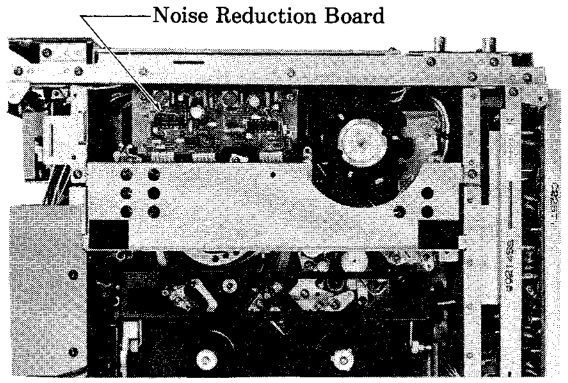
Circuit Board Location Chart

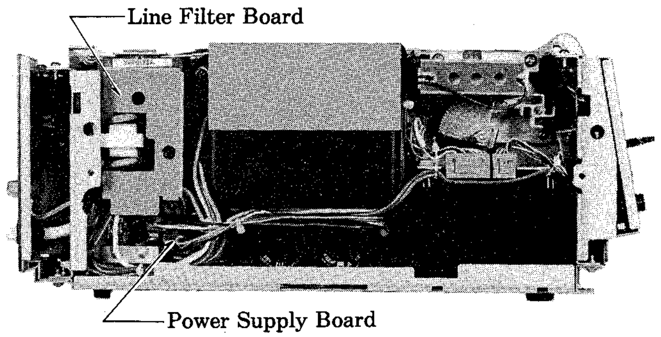
Noise Reduction Board

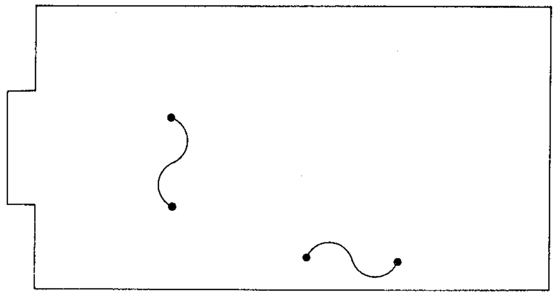
VJB0455


Noise Reduction Board

Power & Line Filter Board

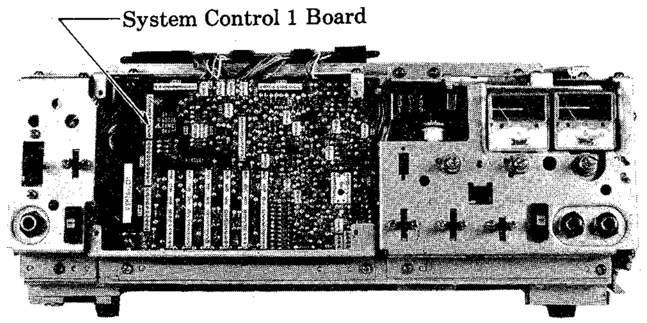
VJB0167/0175


Line Filter Board
Power Supply Board



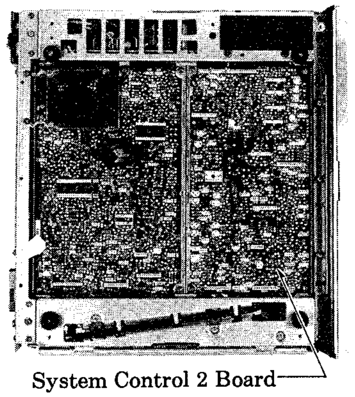
System Control 1 Board

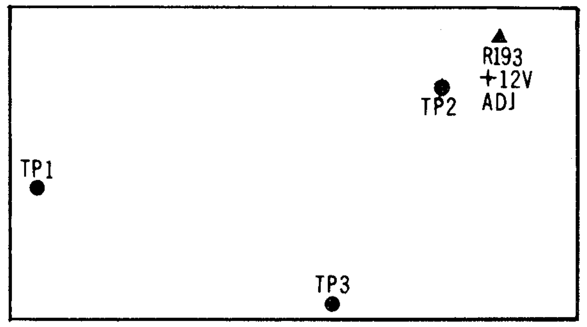
VJB0685


System Control 1 Board

System Control 2 Board

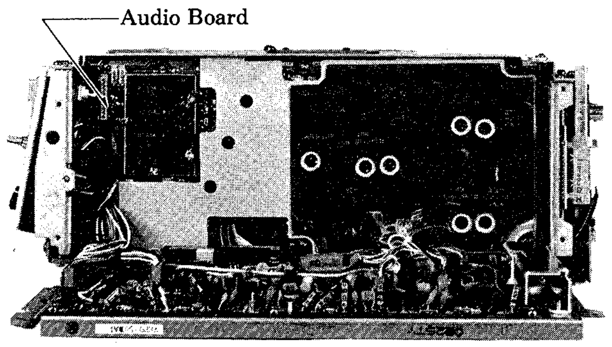
VJB0686

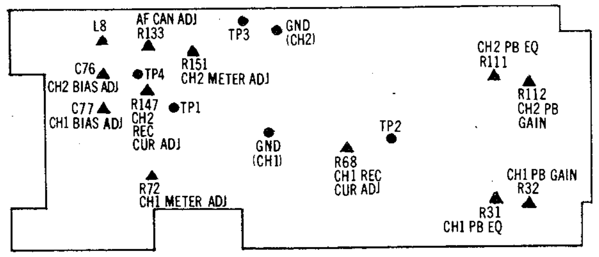

System Control 2 Board


R193
+12V
ADJ
TP2
TP1
TP3

Audio Board

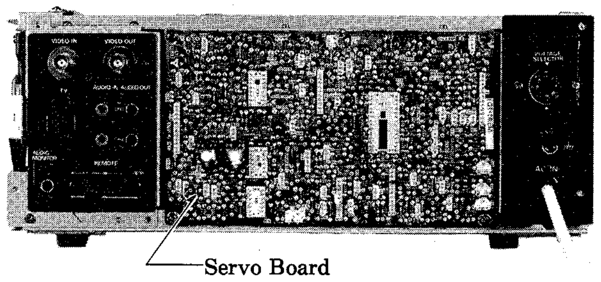
VJB0451

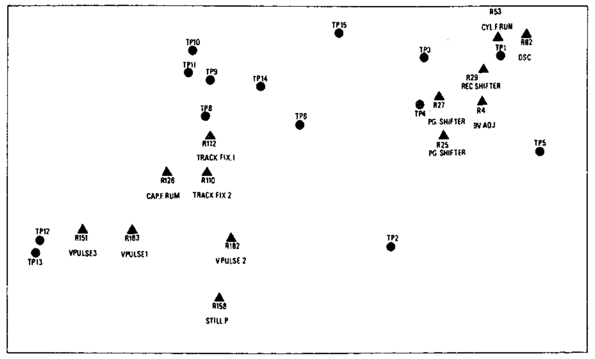

Audio Board


L8
AF CAN ADJ
R133
TP3
GND
(CH2)
C76
CH2 BIAS ADJ
TP4
R151
CH2 METER ADJ
C77
CH1 BIAS ADJ
R147
CH2
REC
CUR ADJ
TP1
GND
(CH1)
R72
CH1 METER ADJ
R68
CH1 REC
CUR ADJ
TP2
CH2 PB EQ
R111
R112
CH2 PB
GAIN
CH1 PB GAIN
R32
R31
CH1 PB EQ

Servo 1 Board

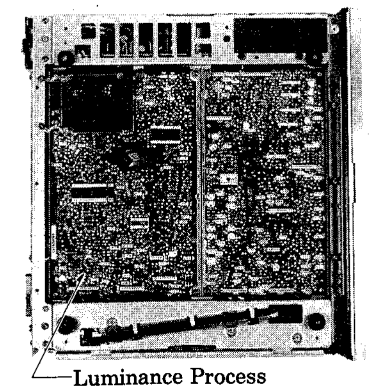
VJB0293

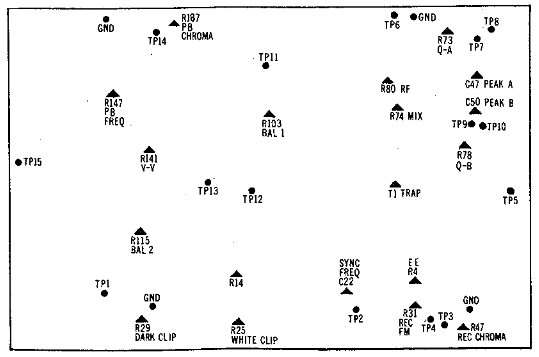

Servo Board


TP15
R53
CYL.F RUN
R82
TP10
TP3
TP1
OSC
TP11
TP9
TP14
R29
REC SHIFTER
TP8
TP6
TP4
R27
PG. SHIFTER
R4
9V ADJ
R132
TRACK FIX.1
R25
PG SHIFTER
TP5
R126
CAP.F RUM
R110
TRACK FIX 2
TP12
TP13
R151
VPULSE3
R183
VPULSE1
R182
VPULSE 2
TP2
R158
STILL.P

Luminance Board

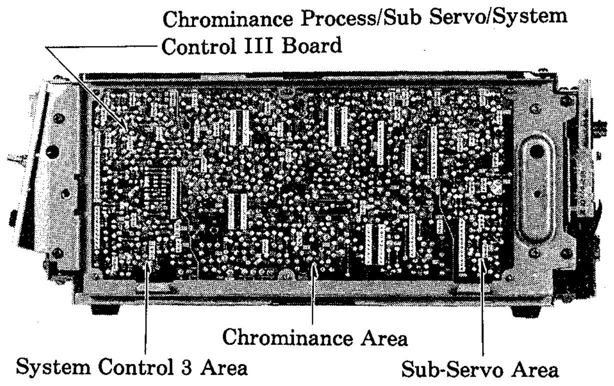
VJB0389

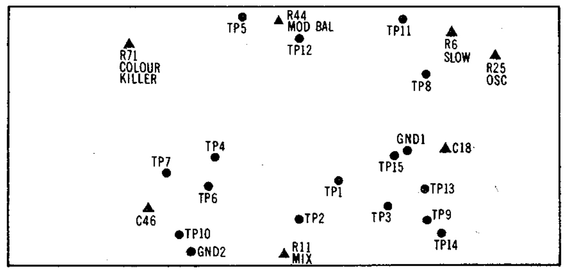

Luminance Process


GND
TP14
R187
PB
CHROMA
TP11
TP6
GND
TP8
R73
Q-A
TP7
R80 RF
C47 PEAK A
R147
PB
FREQ
R103
BAL 1
R74 MIX
C50 PEAK B
TP9
TP10
TP15
R141
V-V
R78
Q-B
TP13
TP12
T1 TRAP
TP5
R115
BAL 2
SYNC
FREQ
C22
EE
R4
TP1
R14
GND
R29
DARK CLIP
R25
WHITE CLIP
TP2
R31
REC
FM
TP4
TP3
GND
R47
REC CHROMA

Sub-Servo/Chrominance System Control 3 Board

VJB0858


Chrominance Process/Sub Servo/System
Control III Board
Chrominance Area
System Control 3 Area
Sub-Servo Area


TP5
R44
MOD BAL
TP12
TP11
R6
SLOW
R71
COLOUR
KILLER
R25
OSC
TP8
TP4
TP7
GND1
C18
TP15
TP6
TP1
TP13
C46
TP2
TP3
TP9
TP10
GND2
R11
MIX
TP14

MEMO

ORDER NO. VRD-8003-385

(79)

Service Manual

Video Cassette Recorder

Panasonic VHS

NV-8200-E -B -A

Block Diagrams
Schematic Diagrams

SPECIFICATIONS

Power Source: 110/127/220/240V AC, 50Hz/60Hz
Power Consumption: Approx. 45 watts
Television System: CCIR: 625 lines, 50 fields
PAL colour signal
Video Recording
System: 2 rotary heads, helical scanning system
Luminance: FM azimuth recording
Colour signal: converted subcarrier phase shift recording
Audio Track: 2 tracks
Tape Format: Tape width 12.7mm, high density tape
Tape Speed: 23.39mm/s (Normal)
Record/Playback Time: 180 min. with NV-E180
FF/REW Time: Less than 4.5 min. with NV-E180
Heads: Video: 2 rotary heads
Audio/Control: 1 stationary head
Erase: 1 full track erase
1 audio track erase for audio dubbing
Input Level: Video: TV Monitor connector (8 pins)
1.0Vp-p, 75Ω unbalanced
VIDEO IN connector (BNC)
1.0Vp-p, 75Ω unbalanced
Audio: TV Monitor connector (8 pins)
−20dB, 100kΩ unbalanced
MIC IN jack × 2
−70dB, 600Ω unbalanced
LINE IN jack (RCA) × 2
−20dB, 100kΩ unbalanced
Output Level: Video: TV Monitor connector (8 pins)
1.0Vp-p, 75Ω unbalanced
VIDEO OUT connector (BNC)
1.0Vp-p, 75Ω unbalanced
Audio: TV Monitor connector (8 pins)
0dB, 5kΩ unbalanced
LINE OUT jack (RCA) × 2
−6dB, 600Ω unbalanced
HEADPHONE jack
−32dB, 8Ω unbalanced

Video Horizontal
Resolution: Colour: more than 240 lines
(on monoscope test pattern) B/W: more than 300 lines
Audio Frequency
Response: 80 ~ 10,000Hz
Signal-to-Noise Ratio: Video: better than 43dB
Audio: better than 45dB
Operating
Temperature: 5°C ~ 40°C
Weight: 15.5kg
Dimensions: 382(W) × 382(D) × 156(H)mm
Accessories Supplied: 1 pc. Video cassette tape, NV-E120
1 pc. 8 pin cable, VJA54S
1 pc. Dust cover, VYC0041
1 pc. Fan bag, VQF0523
1 pc. Protect cover, VYF0154
Optional Accessories: Video cassette tape:
NV-E180 Approx. 258m, 180 min.
NV-E120 Approx. 174m, 120 min.
NV-E60 Approx. 88m, 60 min.
Carrying case, NV-H80-E
Remote controller, NV-A810-E
Approx. 3m
Auto search controller, NV-A800-E
Approx. 2m
Interface adaptor, NV-A820-E
VTR-Monitor connection cable

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic®

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

(80) NV8200

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- Audio Limiter SW/Tracking & Slow Control C.B. (VJB00426) 3-12
- Sensor Lamp C.B. (VJB00430) 3-12
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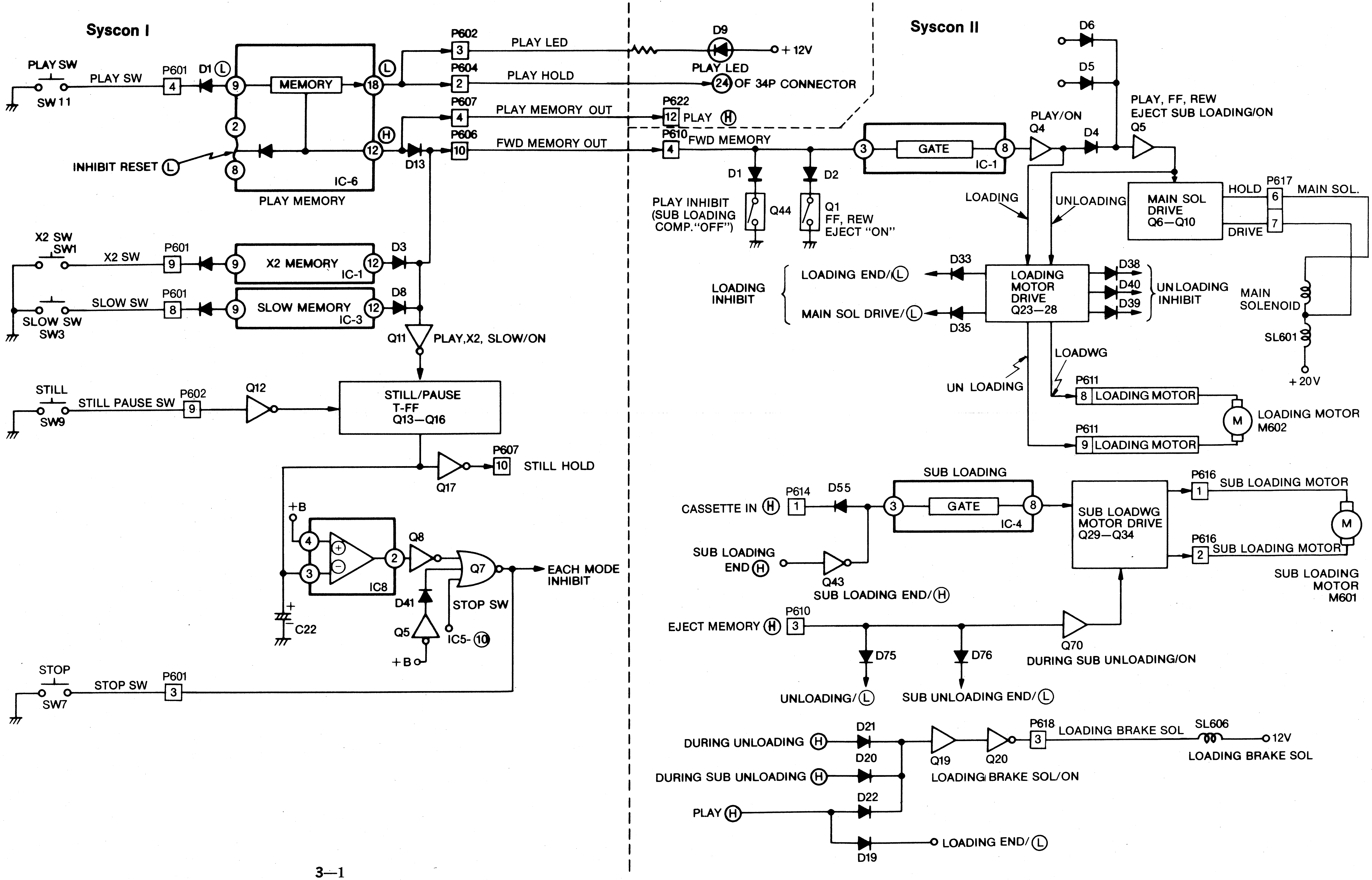
SYSTEM CONTROL BLOCK DIAGRAM PLAY, x 2, SLOW MODE


Syscon I
PLAY SW
SW 11
PLAY SW
P601 4
D1 (L)
9
MEMORY
18
(L)
2
8
12
(H)
INHIBIT RESET (L)
IC-6
PLAY MEMORY
D13
P602 3 PLAY LED
P604 2 PLAY HOLD
P607 4 PLAY MEMORY OUT
P606 10 FWD MEMORY OUT
D9
+12V
PLAY LED
(24) OF 34P CONNECTOR
P622 12 PLAY (H)
P610 4 FWD MEMORY
D1
D2
PLAY INHIBIT (SUB LOADING COMP."OFF")
Q44
Q1 FF, REW EJECT "ON"
X2 SW SW1
X2 SW
P601 9
X2 MEMORY IC-1
D3
SLOW SW SW3
SLOW SW
P601 8
SLOW MEMORY IC-3
D8
Q11
PLAY,X2, SLOW/ON
STILL SW9
STILL PAUSE SW
P602 9
Q12
STILL/PAUSE T-FF Q13—Q16
Q17
P607 10 STILL HOLD
+B
IC8
Q8
Q7
EACH MODE INHIBIT
D41
STOP SW
Q5
IC5-(10)
+B
C22
STOP SW7
STOP SW
P601 3
Syscon II
D6
D5
GATE IC-1
PLAY/ON Q4
D4
PLAY, FF, REW EJECT SUB LOADING/ON Q5
LOADING
UNLOADING
MAIN SOL DRIVE Q6—Q10
HOLD
P617 6
7
DRIVE
MAIN SOL.
LOADING INHIBIT
LOADING END/(L)
MAIN SOL DRIVE/(L)
D33
D35
LOADING MOTOR DRIVE Q23—28
D38
D40
D39
UNLOADING INHIBIT
MAIN SOLENOID
SL601
+20V
LOADWG
UN LOADING
P611 8 LOADING MOTOR
P611 9 LOADING MOTOR
M
LOADING MOTOR M602
SUB LOADING
CASSETTE IN (H)
P614 1
D55
GATE IC-4
SUB LOADWG MOTOR DRIVE Q29—Q34
P616 1 SUB LOADING MOTOR
P616 2 SUB LOADING MOTOR
SUB LOADING MOTOR M601
SUB LOADING END (H)
Q43
SUB LOADING END/(H)
EJECT MEMORY (H)
P610 3
Q70
DURING SUB UNLOADING/ON
D75
D76
UNLOADING/(L)
SUB UNLOADING END/(L)
DURING UNLOADING (H)
DURING SUB UNLOADING (H)
PLAY (H)
D21
D20
D22
D19
LOADING END/(L)
Q19
Q20
LOADING BRAKE SOL/ON
P618 3 LOADING BRAKE SOL
SL606
12V
LOADING BRAKE SOL

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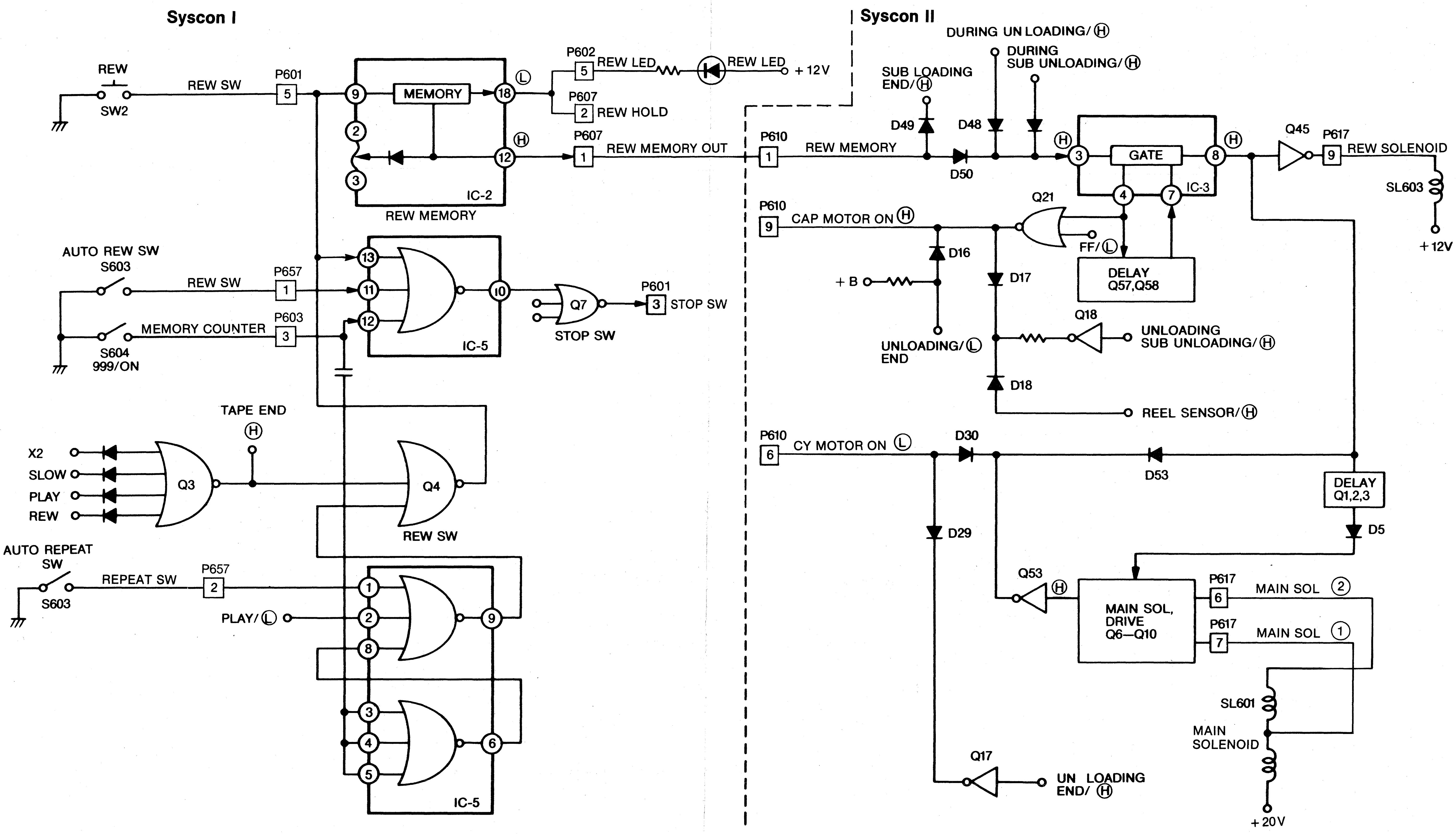
SYSTEM CONTROL BLOOK DIAGRAM REW MODE


Syscon I
Syscon II
REW
SW2
REW SW
P601
5
9
MEMORY
18
Ⓛ
P602
5
REW LED
REW LED
+12V
P607
2
REW HOLD
2
3
12
Ⓗ
P607
1
REW MEMORY OUT
IC-2
REW MEMORY
AUTO REW SW
S603
REW SW
P657
1
S604
999/ON
MEMORY COUNTER
P603
3
13
11
12
10
IC-5
Q7
P601
3
STOP SW
STOP SW
TAPE END
Ⓗ
X2
SLOW
PLAY
REW
Q3
Q4
REW SW
AUTO REPEAT SW
S603
REPEAT SW
P657
2
PLAY/Ⓛ
1
2
8
9
3
4
5
6
IC-5
DURING UN LOADING/Ⓗ
DURING SUB UNLOADING/Ⓗ
SUB LOADING END/Ⓗ
D49
D48
P610
1
REW MEMORY
D50
Ⓗ
3
GATE
8
Ⓗ
4
7
IC-3
Q45
P617
9
REW SOLENOID
SL603
+12V
P610
9
CAP MOTOR ON Ⓗ
Q21
D16
FF/Ⓛ
DELAY Q57,Q58
+B
D17
Q18
UNLOADING SUB UNLOADING/Ⓗ
UNLOADING/Ⓛ END
D18
REEL SENSOR/Ⓗ
P610
6
CY MOTOR ON Ⓛ
D30
D53
DELAY Q1,2,3
D5
D29
Q53
Ⓗ
MAIN SOL, DRIVE Q6—Q10
P617
6
MAIN SOL ②
P617
7
MAIN SOL ①
SL601
MAIN SOLENOID
+20V
Q17
UN LOADING END/ Ⓗ

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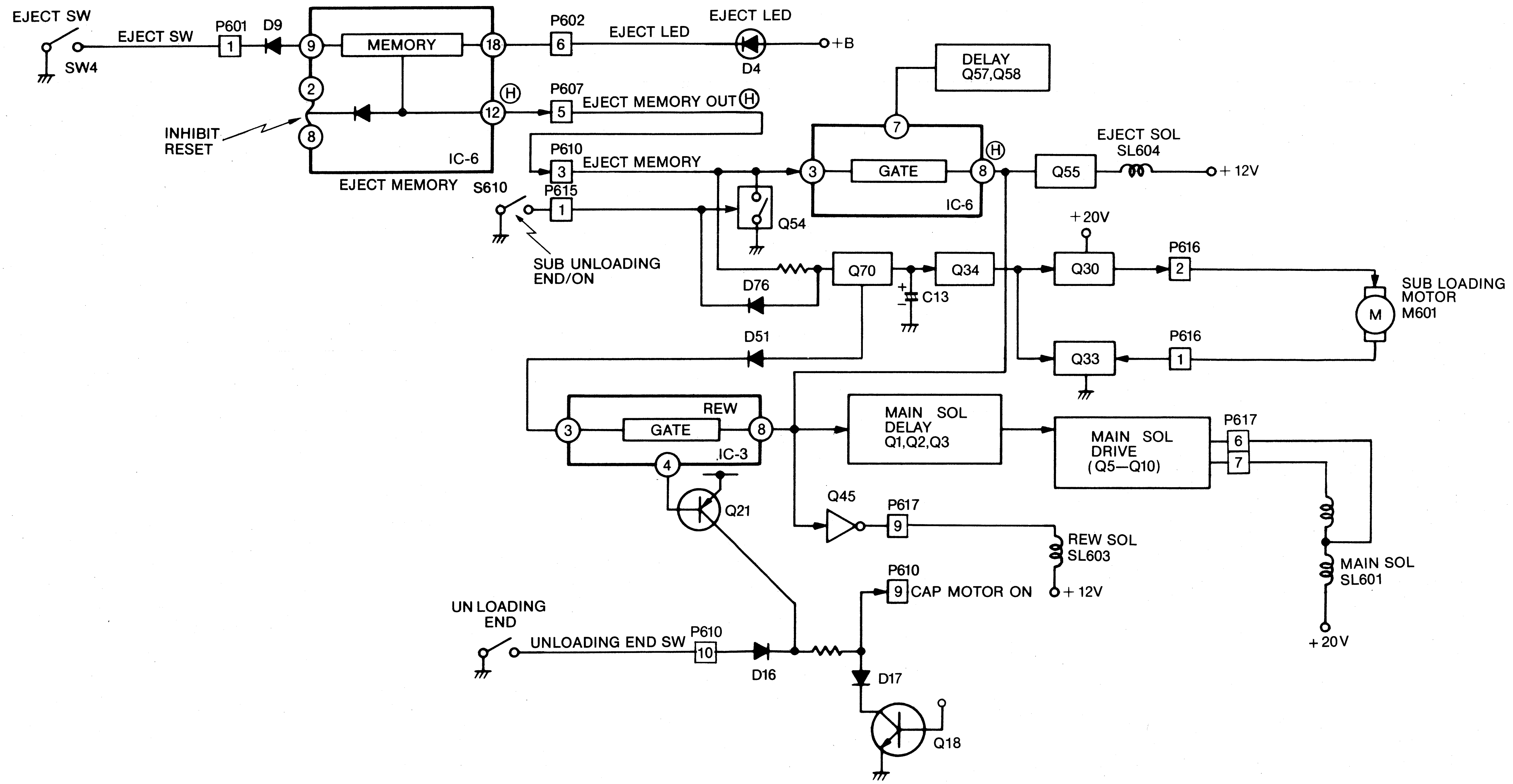
SYSTEM CONTROL BLOCK DIAGRAM EJECT MODE


EJECT SW
SW4
EJECT SW
P601
1
D9
9
MEMORY
18
2
12
8
H
INHIBIT
RESET
IC-6
EJECT MEMORY
P602
6
EJECT LED
EJECT LED
D4
+B
P607
5
EJECT MEMORY OUT H
P610
3
EJECT MEMORY
S610
P615
1
SUB UNLOADING
END/ON
Q54
DELAY
Q57,Q58
7
3
GATE
8
H
IC-6
Q55
EJECT SOL
SL604
+ 12V
D76
Q70
Q34
C13
+20V
Q30
P616
2
SUB LOADING
MOTOR
M601
M
D51
Q33
P616
1
REW
3
GATE
8
IC-3
4
Q21
MAIN SOL
DELAY
Q1,Q2,Q3
MAIN SOL
DRIVE
(Q5—Q10)
P617
6
7
Q45
P617
9
REW SOL
SL603
+ 12V
MAIN SOL
SL601
+20V
P610
9
CAP MOTOR ON
UN LOADING
END
UNLOADING END SW
P610
10
D16
D17
Q18

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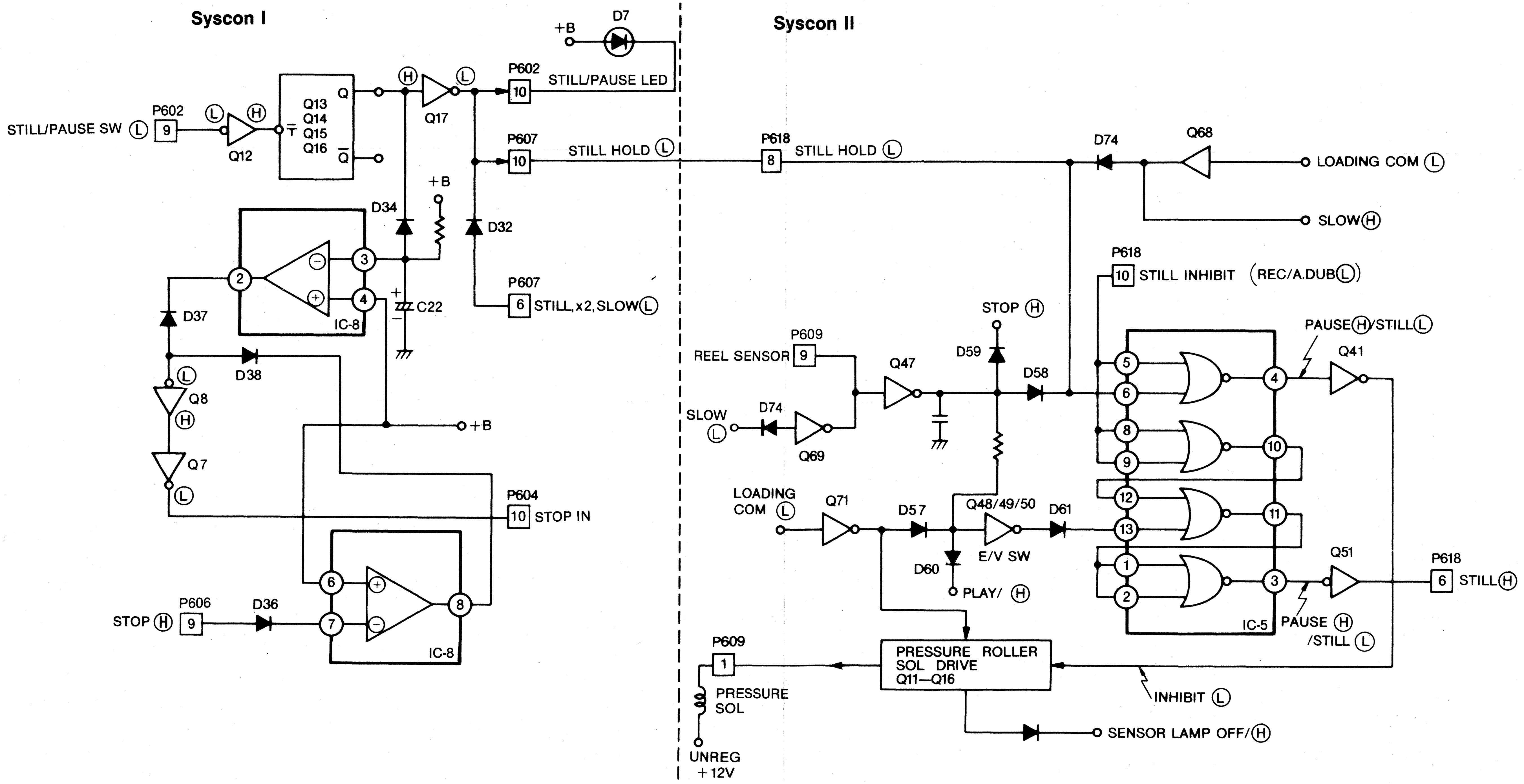
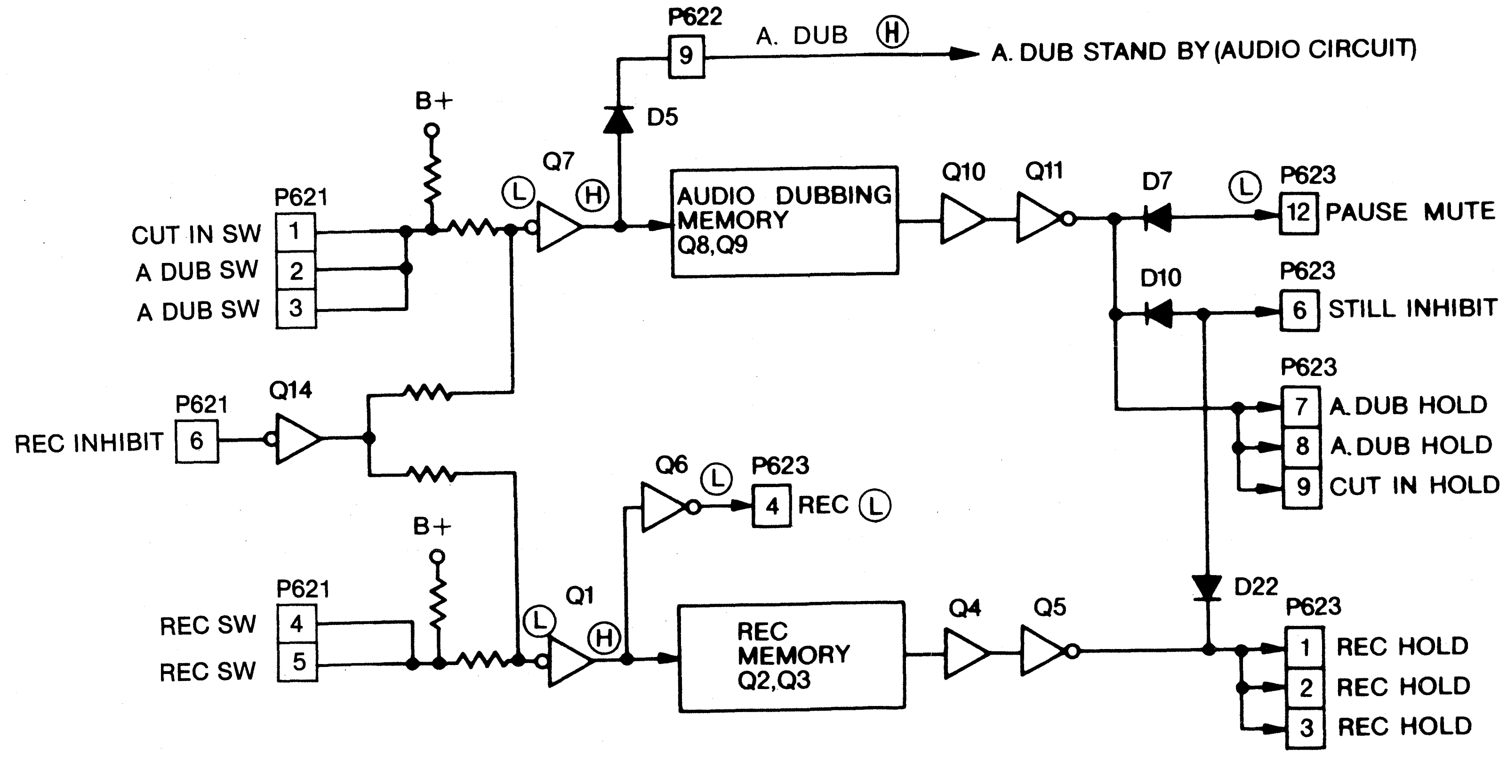
SYSTEM CONTROL BLOCK DIAGRAM STILL/PAUSE MODE, CYLINDER LOCK & PRESSURE ROLLER SOLENOID



Syscon I
Syscon II
+B
D7
P602
10
STILL/PAUSE LED
STILL/PAUSE SW Ⓛ
P602
9
Ⓛ
Ⓗ
Q12
Q13
Q14
Q15
Q16
Q
T
Q̄
Ⓗ
Ⓛ
Q17
P607
10
STILL HOLD Ⓛ
P618
8
STILL HOLD Ⓛ
D74
Q68
LOADING COM Ⓛ
SLOW Ⓗ
+B
D34
D32
P607
6
STILL, x2, SLOW Ⓛ
2
3
4
IC-8
C22
D37
D38
Ⓛ
Q8
Ⓗ
Q7
Ⓛ
+B
P604
10
STOP IN
P606
STOP Ⓗ
9
D36
6
7
8
IC-8
P618
10
STILL INHIBIT (REC/A.DUB Ⓛ)
STOP Ⓗ
PAUSE Ⓗ/STILL Ⓛ
Q41
P609
REEL SENSOR
9
Q47
D59
D58
SLOW Ⓛ
D74
Q69
LOADING COM Ⓛ
Q71
D57
Q48/49/50
D61
E/V SW
D60
PLAY/ Ⓗ
5
6
8
9
12
13
1
2
4
10
11
3
IC-5
Q51
P618
6
STILL Ⓗ
PAUSE Ⓗ /STILL Ⓛ
P609
1
PRESSURE SOL
UNREG +12V
PRESSURE ROLLER SOL DRIVE Q11—Q16
INHIBIT Ⓛ
SENSOR LAMP OFF/ Ⓗ

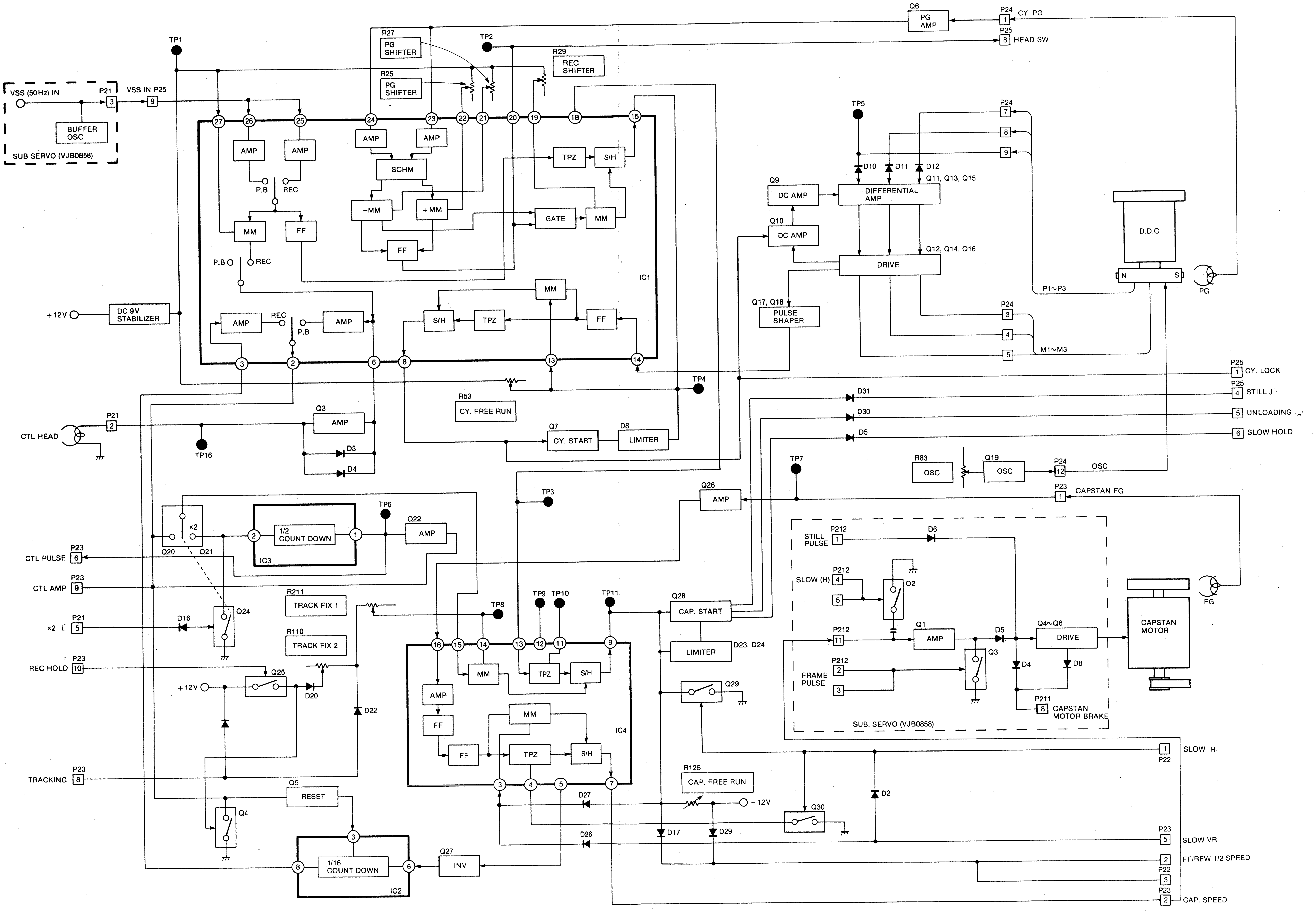
(85) NV 8200

SYSTEM CONTROL III BLOCK DIAGRAM (Record Mode)


P622
9
A. DUB Ⓗ
A. DUB STAND BY (AUDIO CIRCUIT)
D5
B+
Q7
Ⓛ
Ⓗ
P621
CUT IN SW
1
A DUB SW
2
A DUB SW
3
AUDIO DUBBING MEMORY Q8,Q9
Q10
Q11
D7
Ⓛ
P623
12
PAUSE MUTE
D10
P623
6
STILL INHIBIT
P623
7
A.DUB HOLD
8
A.DUB HOLD
9
CUT IN HOLD
P621
Q14
REC INHIBIT
6
Q6
Ⓛ
P623
4
REC Ⓛ
B+
P621
REC SW
4
REC SW
5
Q1
Ⓛ
Ⓗ
REC MEMORY Q2,Q3
Q4
Q5
D22
P623
1
REC HOLD
2
REC HOLD
3
REC HOLD

(86) NV 8200

SERVO BLOCK DIAGRAM


VSS (50Hz) IN
P21
BUFFER OSC
SUB SERVO (VJB0858)
VSS IN P25
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP16
R27
PG SHIFTER
R25
PG SHIFTER
R29
REC SHIFTER
Q6
PG AMP
P24
CY. PG
P25
HEAD SW
AMP
SCHM
−MM
+MM
FF
MM
TPZ
S/H
GATE
P.B
REC
IC1
+12V
DC 9V STABILIZER
R53
CY. FREE RUN
Q7
CY. START
D8
LIMITER
CTL HEAD
Q3
D3
D4
Q9
DC AMP
Q10
DIFFERENTIAL AMP
DRIVE
D10
D11
D12
Q11, Q13, Q15
Q12, Q14, Q16
Q17, Q18
PULSE SHAPER
D.D.C
N
S
PG
P1~P3
M1~M3
CY. LOCK
STILL L
UNLOADING L
SLOW HOLD
D31
D30
D5
R83
OSC
Q19
OSC
P23
CAPSTAN FG
Q26
Q20
Q21
×2
1/2 COUNT DOWN
IC3
Q22
CTL PULSE
CTL AMP
×2 L
D16
Q24
R211
TRACK FIX 1
R110
TRACK FIX 2
REC HOLD
Q25
D20
D22
TRACKING
Q4
Q5
RESET
1/16 COUNT DOWN
IC2
Q27
INV
IC4
Q28
CAP. START
LIMITER
D23, D24
Q29
R126
CAP. FREE RUN
D27
D26
D17
D29
Q30
D2
P212
STILL PULSE
D6
SLOW (H)
Q2
Q1
D5
Q4~Q6
Q3
D4
D8
FRAME PULSE
P211
CAPSTAN MOTOR BRAKE
SUB. SERVO (VJB0858)
CAPSTAN MOTOR
FG
P22
SLOW H
SLOW VR
FF/REW 1/2 SPEED
CAP. SPEED

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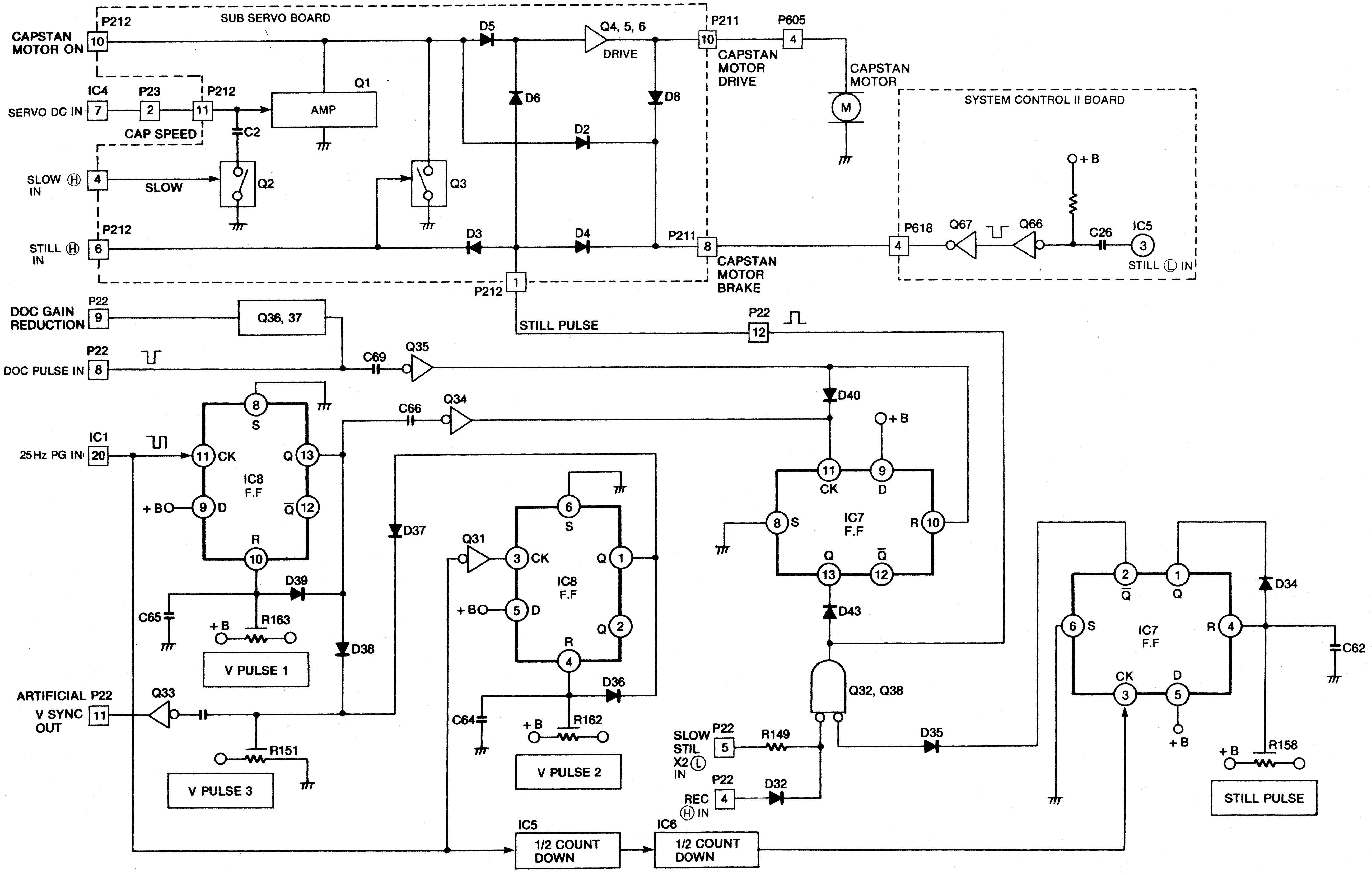
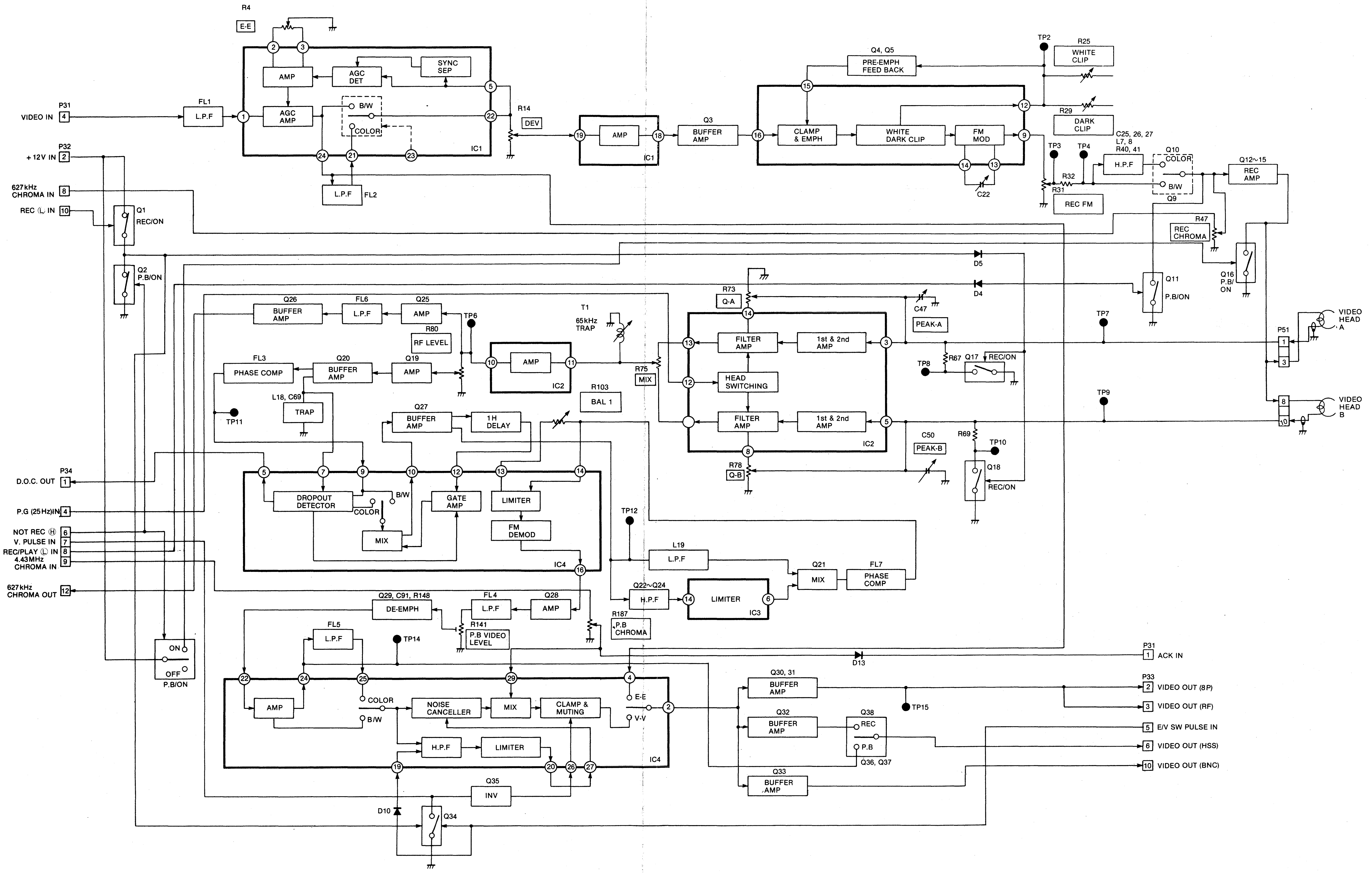
SERVO BLOCK DIAGRAM STILL & SLOW MODE


SUB SERVO BOARD
P212
CAPSTAN MOTOR ON
10
D5
Q4, 5, 6
DRIVE
P211
10
CAPSTAN MOTOR DRIVE
P605
4
CAPSTAN MOTOR
M
IC4
P23
P212
Q1
SERVO DC IN
7
2
11
AMP
CAP SPEED
C2
D6
D8
D2
SYSTEM CONTROL II BOARD
+B
SLOW Ⓗ IN
4
SLOW
Q2
Q3
P212
STILL Ⓗ IN
6
D3
D4
P211
8
CAPSTAN MOTOR BRAKE
P618
4
Q67
Q66
C26
IC5
3
STILL Ⓛ IN
P212
1
DOC GAIN REDUCTION
P22
9
Q36, 37
STILL PULSE
P22
12
P22
DOC PULSE IN
8
C69
Q35
D40
C66
Q34
8
S
IC1
25Hz PG IN
20
11
CK
Q
13
IC8
F.F
+B
9
D
Q̄
12
R
10
+B
11
CK
9
D
8
S
IC7
F.F
R
10
Q
13
Q̄
12
D37
6
S
Q31
3
CK
IC8
F.F
Q
1
+B
5
D
Q
2
R
4
D39
C65
+B
R163
V PULSE 1
D38
D36
C64
+B
R162
V PULSE 2
D43
Q32, Q38
ARTIFICIAL P22
V SYNC OUT
11
Q33
R151
V PULSE 3
SLOW STIL X2 Ⓛ IN
P22
5
R149
P22
REC Ⓗ IN
4
D32
D35
2
Q̄
1
Q
6
S
IC7
F.F
R
4
CK
3
D
5
+B
D34
C62
+B
R158
STILL PULSE
IC5
1/2 COUNT DOWN
IC6
1/2 COUNT DOWN

(88) NV 8200

LUMINANCE PROCESS BLOCK DIAGRAM



R4
E-E
SYNC SEP
AMP
AGC DET
AGC AMP
B/W
COLOR
IC1
P31
VIDEO IN 4
FL1
L.P.F
P32
+12V IN 2
627kHz CHROMA IN 8
REC Ⓛ IN 10
Q1
REC/ON
Q2
P.B/ON
L.P.F
FL2
R14
DEV
AMP
IC1
Q3
BUFFER AMP
Q4, Q5
PRE-EMPH FEED BACK
CLAMP & EMPH
WHITE DARK CLIP
FM MOD
C22
TP2
R25
WHITE CLIP
R29
DARK CLIP
TP3
TP4
R32
R31
REC FM
C25, 26, 27
L7, 8
R40, 41
H.P.F
Q10
COLOR
B/W
Q9
Q12~15
REC AMP
R47
REC CHROMA
Q16
P.B/ON
Q11
P.B/ON
D5
D4
Q26
BUFFER AMP
FL6
L.P.F
Q25
AMP
TP6
R80
RF LEVEL
FL3
PHASE COMP
Q20
BUFFER AMP
Q19
AMP
L18, C69
TRAP
TP11
T1
65kHz TRAP
AMP
IC2
R75
MIX
R103
BAL 1
R73
Q-A
C47
PEAK-A
FILTER AMP
1st & 2nd AMP
HEAD SWITCHING
FILTER AMP
1st & 2nd AMP
IC2
R78
Q-B
TP8
R67
Q17
REC/ON
C50
PEAK-B
R69
TP10
Q18
REC/ON
TP7
TP9
P51
VIDEO HEAD A
VIDEO HEAD B
Q27
BUFFER AMP
1H DELAY
P34
D.O.C. OUT 1
P.G (25Hz)IN 4
NOT REC Ⓗ 6
V. PULSE IN 7
REC/PLAY Ⓛ IN 8
4.43MHz CHROMA IN 9
627kHz CHROMA OUT 12
DROPOUT DETECTOR
B/W
COLOR
GATE AMP
MIX
LIMITER
FM DEMOD
IC4
TP12
L19
L.P.F
Q21
MIX
FL7
PHASE COMP
Q22~Q24
H.P.F
LIMITER
IC3
R187
P.B CHROMA
Q29, C91, R148
DE-EMPH
FL4
L.P.F
Q28
AMP
R141
P.B VIDEO LEVEL
FL5
L.P.F
TP14
ON
OFF
P.B/ON
AMP
COLOR
B/W
NOISE CANCELLER
MIX
CLAMP & MUTING
E-E
V-V
H.P.F
LIMITER
IC4
Q35
INV
D10
Q34
D13
P31
ACK IN 1
P33
Q30, 31
BUFFER AMP
TP15
Q32
BUFFER AMP
Q38
REC
P.B
Q36, Q37
Q33
BUFFER AMP
VIDEO OUT (8P) 2
VIDEO OUT (RF) 3
E/V SW PULSE IN 5
VIDEO OUT (HSS) 6
VIDEO OUT (BNC) 10

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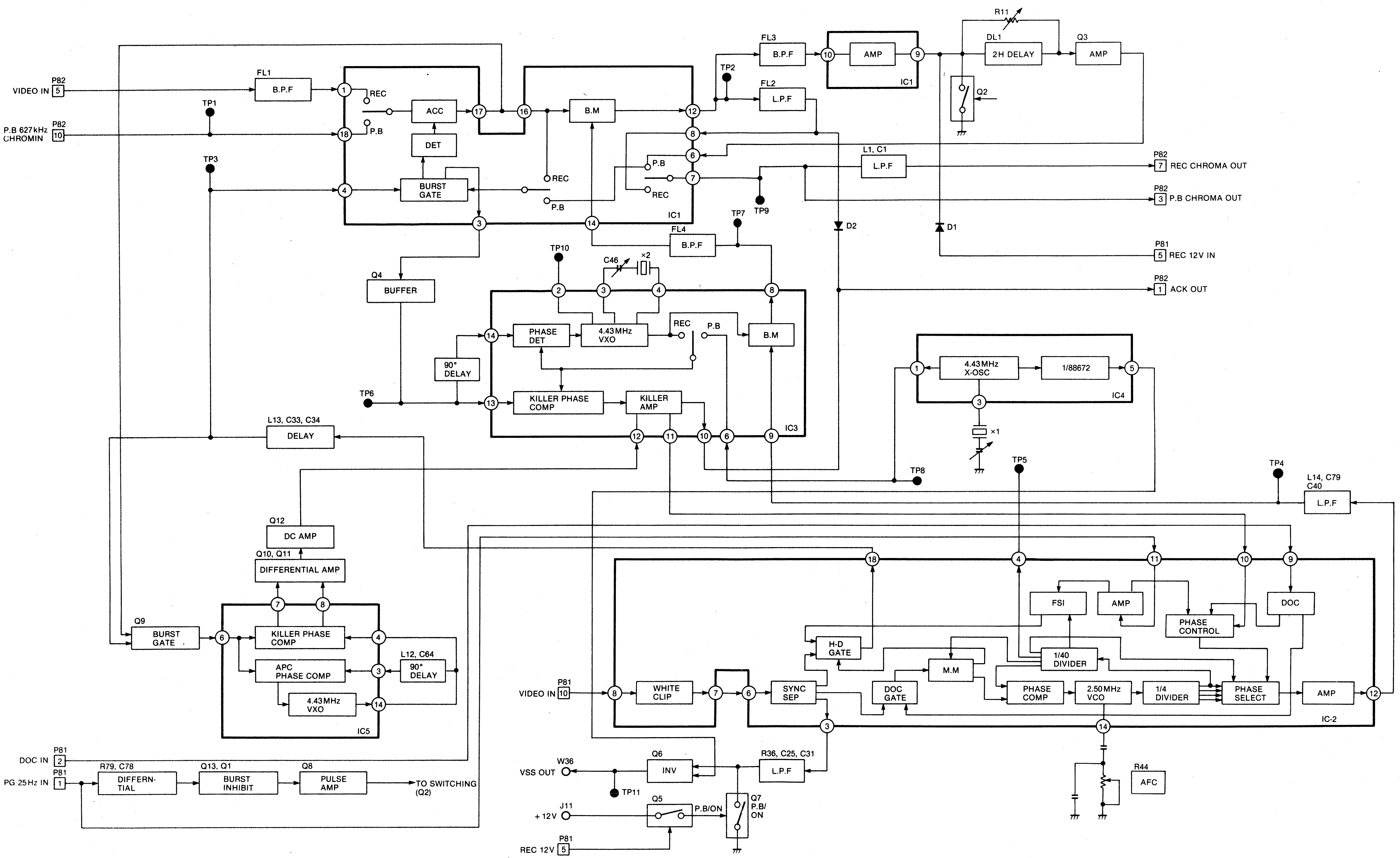
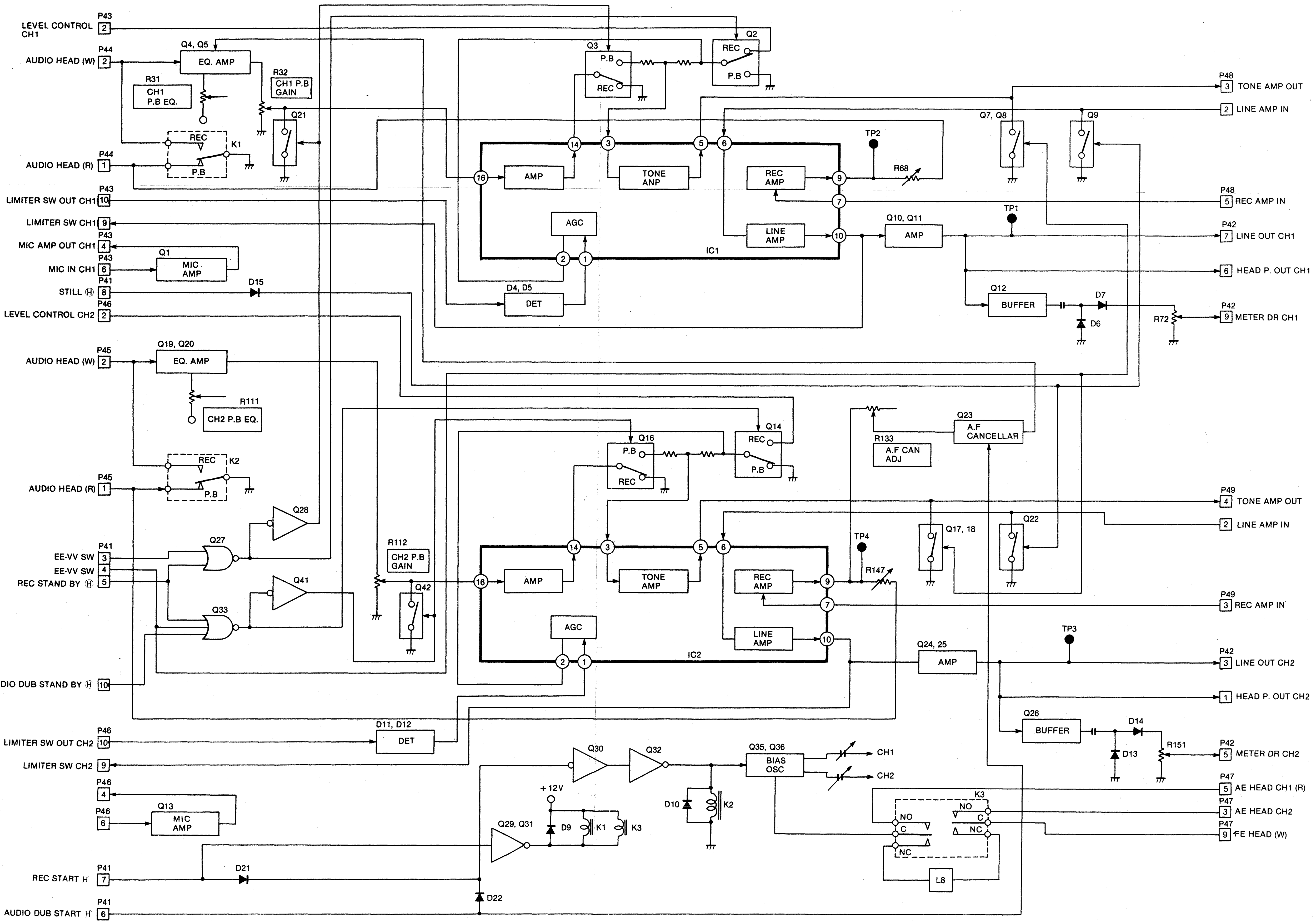
CHROMINANCE PROCESS BLOCK DIAGRAM


VIDEO IN
P82 5
P.B 627kHz CHROMIN
P82 10
TP1
TP3
FL1
B.P.F
REC
P.B
ACC
DET
BURST GATE
REC
P.B
IC1
B.M
TP2
FL3
B.P.F
AMP
IC1
FL2
L.P.F
R11
DL1
2H DELAY
Q3
AMP
Q2
L1, C1
L.P.F
P82 7 REC CHROMA OUT
P82 3 P.B CHROMA OUT
REC
TP9
TP7
D2
D1
P81 5 REC 12V IN
P82 1 ACK OUT
FL4
B.P.F
TP10
C46
×2
Q4
BUFFER
PHASE DET
4.43MHz VXO
REC
P.B
B.M
90° DELAY
TP6
KILLER PHASE COMP
KILLER AMP
IC3
4.43MHz X-OSC
1/88672
IC4
×1
TP8
TP5
TP4
L14, C79 C40
L.P.F
L13, C33, C34
DELAY
Q12
DC AMP
Q10, Q11
DIFFERENTIAL AMP
Q9
BURST GATE
KILLER PHASE COMP
APC PHASE COMP
4.43MHz VXO
IC5
L12, C64
90° DELAY
FSI
AMP
DOC
PHASE CONTROL
H-D GATE
M.M
1/40 DIVIDER
P81
VIDEO IN 10
WHITE CLIP
SYNC SEP
DOC GATE
PHASE COMP
2.50MHz VCO
1/4 DIVIDER
PHASE SELECT
AMP
IC-2
P81
DOC IN 2
P81
PG 25Hz IN 1
R79, C78
DIFFERN-TIAL
Q13, Q1
BURST INHIBIT
Q8
PULSE AMP
TO SWITCHING (Q2)
W36
VSS OUT
Q6
INV
TP11
R36, C25, C31
L.P.F
J11
+12V
Q5
P.B/ON
Q7 P.B/ON
P81
REC 12V 5
R44
AFC

(90) NV 8200

AUDIO BLOCK DIAGRAM



P43
LEVEL CONTROL CH1 2
P44
AUDIO HEAD (W) 2
Q4, Q5
EQ. AMP
R31
CH1 P.B EQ.
R32
CH1 P.B GAIN
Q21
REC
K1
P.B
P44
AUDIO HEAD (R) 1
P43
LIMITER SW OUT CH1 10
LIMITER SW CH1 9
P43
MIC AMP OUT CH1 4
P43
MIC IN CH1 6
Q1
MIC AMP
P41
STILL Ⓗ 8
D15
P46
LEVEL CONTROL CH2 2
Q3
P.B
REC
Q2
REC
P.B
14
3
5
6
16
AMP
TONE ANP
REC AMP
LINE AMP
AGC
2
1
IC1
D4, D5
DET
9
7
10
TP2
R68
TP1
Q10, Q11
AMP
Q12
BUFFER
D7
D6
R72
Q7, Q8
Q9
P48
3 TONE AMP OUT
2 LINE AMP IN
P48
5 REC AMP IN
P42
7 LINE OUT CH1
6 HEAD P. OUT CH1
P42
9 METER DR CH1
P45
AUDIO HEAD (W) 2
Q19, Q20
EQ. AMP
R111
CH2 P.B EQ.
REC
K2
P.B
P45
AUDIO HEAD (R) 1
Q28
Q27
P41
EE-VV SW 3
EE-VV SW 4
REC STAND BY Ⓗ 5
Q41
Q33
R112
CH2 P.B GAIN
Q42
AUDIO DUB STAND BY Ⓗ 10
Q16
P.B
REC
Q14
REC
P.B
14
3
5
6
16
AMP
TONE AMP
REC AMP
LINE AMP
AGC
2
1
IC2
9
7
10
TP4
R147
R133
A.F CAN ADJ
Q23
A.F CANCELLAR
Q17, 18
Q22
P49
4 TONE AMP OUT
2 LINE AMP IN
P49
3 REC AMP IN
TP3
Q24, 25
AMP
P42
3 LINE OUT CH2
1 HEAD P. OUT CH2
Q26
BUFFER
D14
D13
R151
P42
5 METER DR CH2
P46
LIMITER SW OUT CH2 10
D11, D12
DET
LIMITER SW CH2 9
Q30
Q32
Q35, Q36
BIAS OSC
CH1
CH2
P46
4
P46
6
Q13
MIC AMP
+12V
Q29, Q31
D9
K1
K3
D10
K2
K3
NO
C
NC
NO
C
NC
L8
P47
5 AE HEAD CH1 (R)
P47
3 AE HEAD CH2
P47
9 FE HEAD (W)
P41
REC START Ⓗ 7
D21
D22
P41
AUDIO DUB START Ⓗ 6

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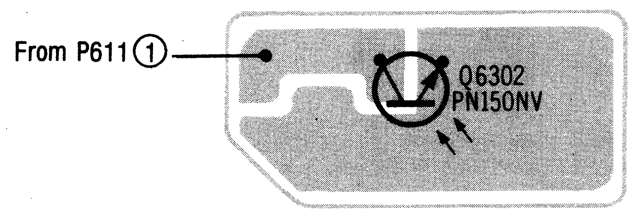
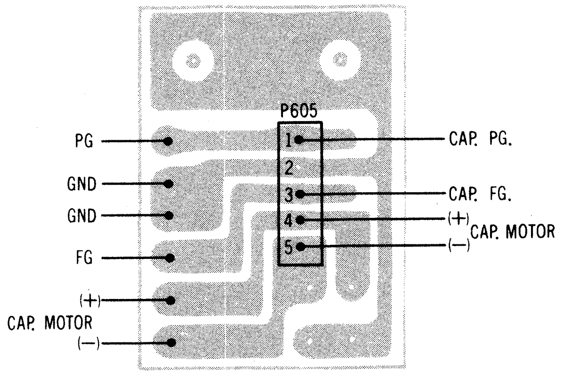
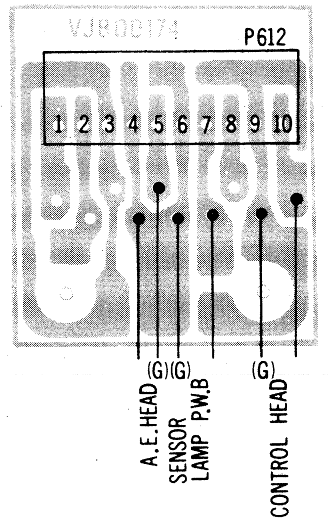
SUPPLY PHOTO TR CONNECTION C.B. (VJB00132)


From P611 ①
Q6302
PN150NV

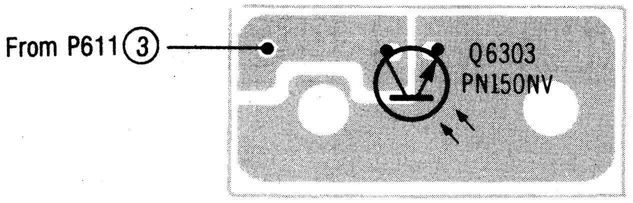
CAPSTAN MOTOR CONNECTION C.B. (VJB00171)


P605
PG
GND
GND
FG
(+)
CAP. MOTOR
(−)
1
2
3
4
5
CAP. PG.
CAP. FG.
(+)
CAP. MOTOR
(−)

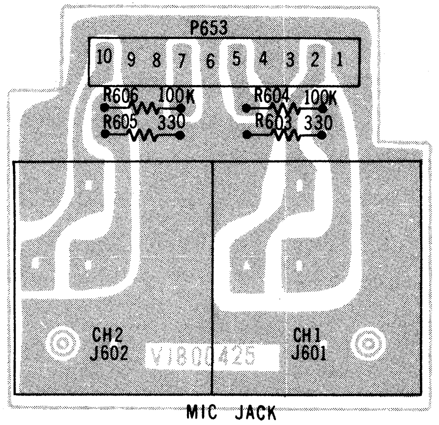
CONTROL HEAD CONNECTION C.B. (VJB00174)


VJB00174
P612
1 2 3 4 5 6 7 8 9 10
(G)(G)
(G)
A.E.HEAD
SENSOR LAMP P.W.B
CONTROL HEAD

TAKEUP PHOTO TR CONNECTION C.B. (VJB00183)


From P611 ③
Q6303
PN150NV

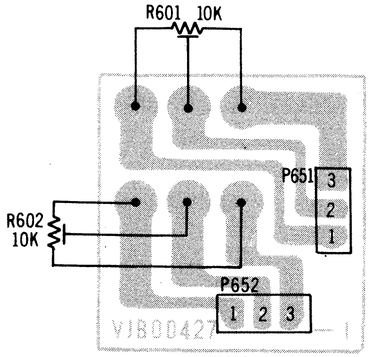
MIC JACK C.B. (VJB00425)


P653
10 9 8 7 6 5 4 3 2 1
R606 100K
R605 330
R604 100K
R603 330
CH2
J602
CH1
J601
VJB00425
MIC JACK

P653

1	GND
2	AUDIO OUT
3	GND
4	GND
5	AUDIO IN
6	GND
7	AUDIO IN
8	GND
9	GND
10	AUDIO OUT

AUDIO LEVEL CONTROL (VJB00427)


R601 10K
R602
10K
P651
3
2
1
P652
1 2 3
VJB00427

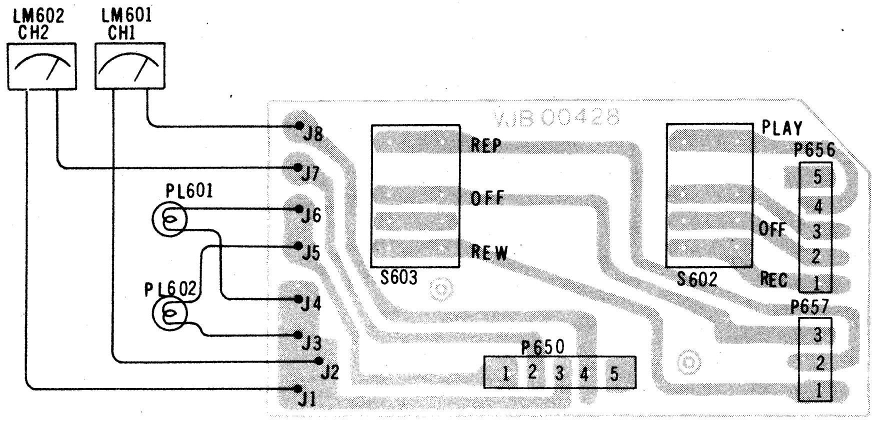
P651

3	CH2 VR IN(R)
2	CH2 VR OUT(W)
1	GND

P652

3	CH1 VR IN(R)
2	CH1 VR OUT(W)
1	GND

AUDIO REPEAT/REWIND SW, TIMER REC/PLAY SW, LAMP & METER CONNECTION C.B. (VJB00428)


LM602
CH2
LM601
CH1
PL601
PL602
VJB00428
J8
J7
J6
J5
J4
J3
J2
J1
REP
OFF
REW
S603
PLAY
OFF
REC
S602
P656
5
4
3
2
1
P657
3
2
1
P650
1 2 3 4 5

P656

5	
4	TIMER PLAY IN
3	REC/PLAY OUT
2	OFF IN
1	TIMER REC IN

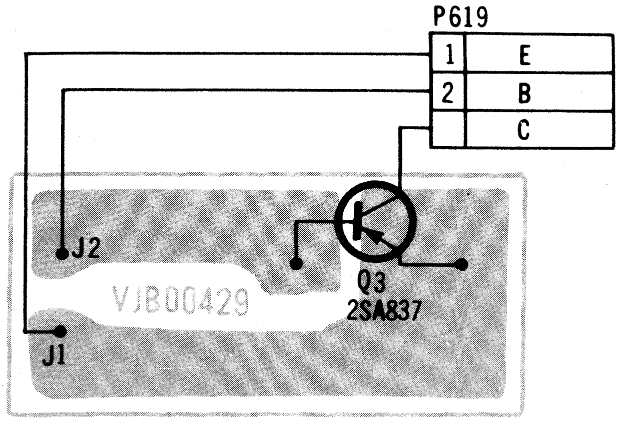
P657

3	GND
2	REPEAT IN
1	REW IN

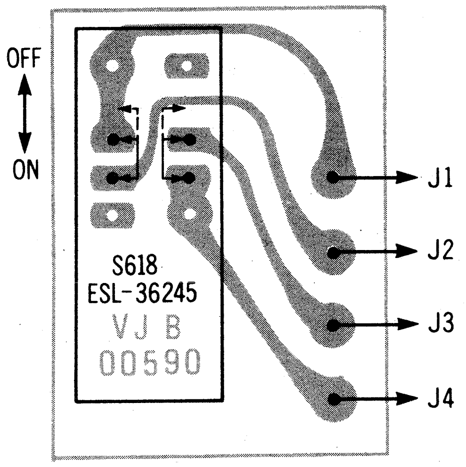
P650

1	+12V IN
2	CH2 METER
3	GND
4	CH1 METER
5	

POWER TR C.B. (VJB00429)


P619
1 E
2 B
C
J2
J1
VJB00429
Q3
2SA837

N.R. SW C.B. (VJB00590)


OFF
ON
S618
ESL-36245
VJB
00590
J1
J2
J3
J4

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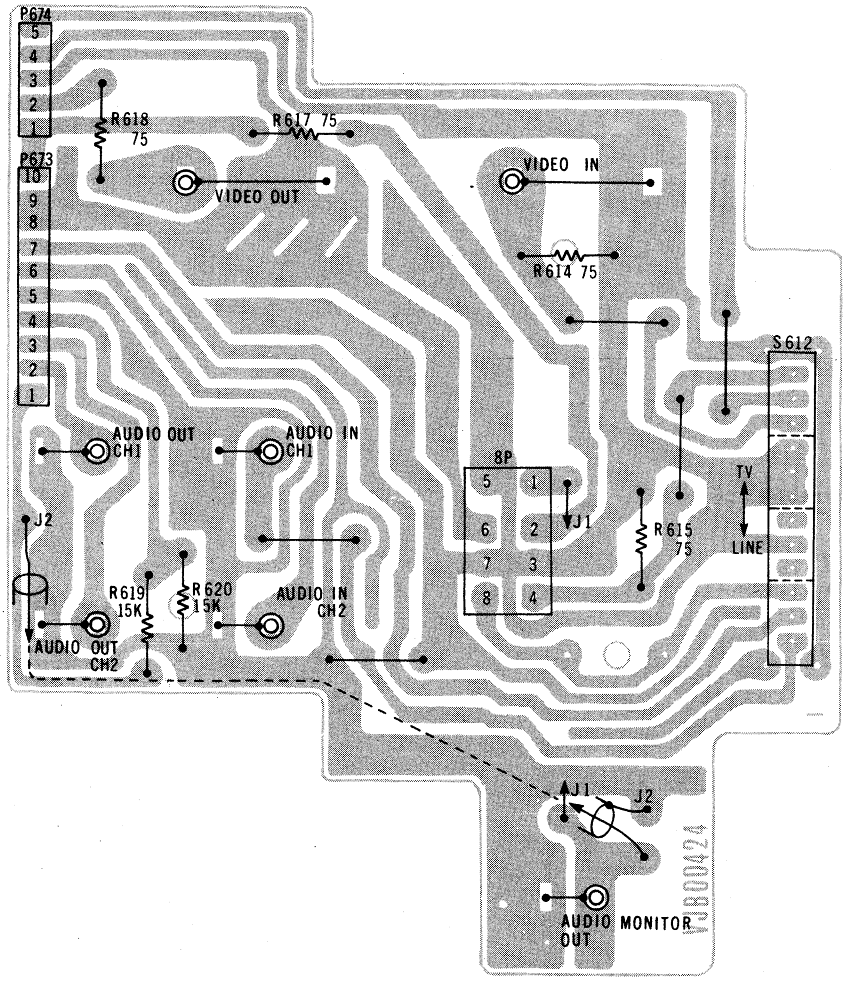
INPUT/OUTPUT JACK C.B. (VJB00424)

P674

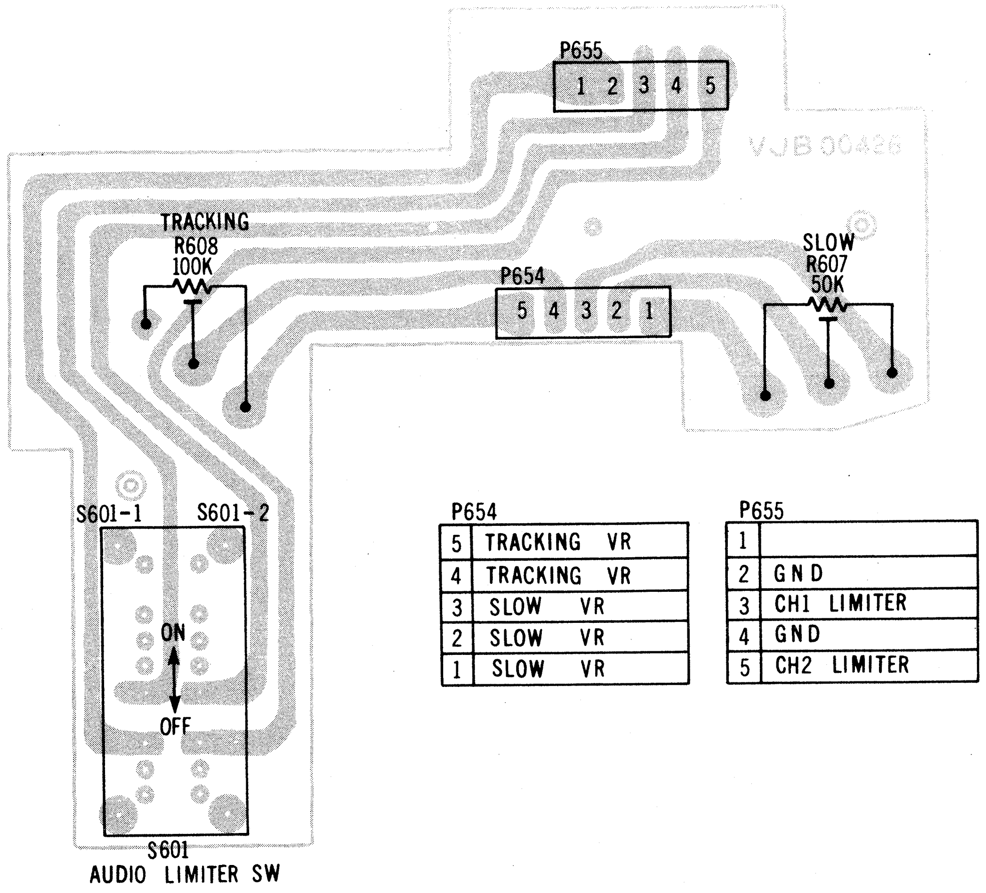
5	VIDEO IN
4	GND
3	GND
2	VIDEO OUT
1	

P673

10	VIDEO OUT
9	GND
8	GND
7	AUDIO CH1 LINE IN
6	AUDIO CH2 LINE IN
5	GND
4	RF AUDIO OUT
3	CH2 LINE OUT
2	CH1 LINE OUT
1	8P AUDIO OUT


P674
R618 75
R617 75
P673
VIDEO OUT
VIDEO IN
R614 75
S612
AUDIO OUT CH1
AUDIO IN CH1
8P
J2
J1
R615 75
TV
LINE
R619 15K
R620 15K
AUDIO IN CH2
AUDIO OUT CH2
J1
J2
AUDIO MONITOR OUT
VJB00424

AUDIO LIMITER SW/TRACKING & SLOW CONTROL C.B. (VJB00426)


P655
VJB00426
TRACKING
R608
100K
P654
SLOW
R607
50K
S601-1
S601-2
ON
OFF
S601
AUDIO LIMITER SW

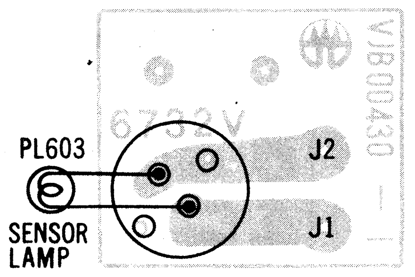
P654

5	TRACKING VR
4	TRACKING VR
3	SLOW VR
2	SLOW VR
1	SLOW VR

P655

1	
2	GND
3	CH1 LIMITER
4	GND
5	CH2 LIMITER

SENSOR LAMP C.B. (VJB00430)


VJB00430
PL603
J2
J1
SENSOR LAMP

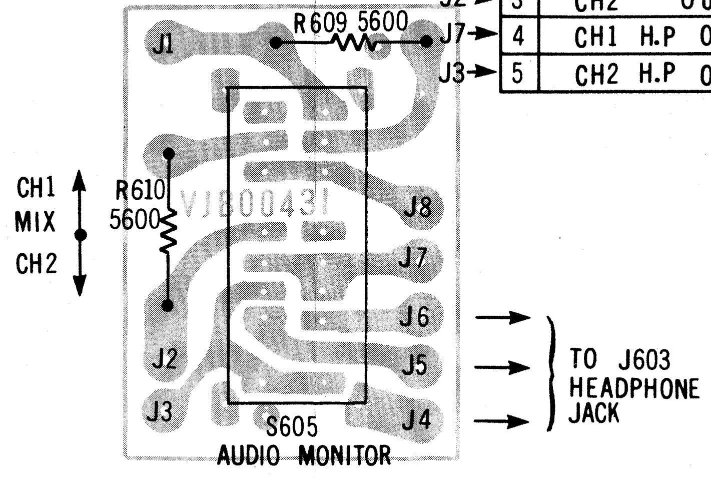
P612

1	
2	SENSOR
3	GND

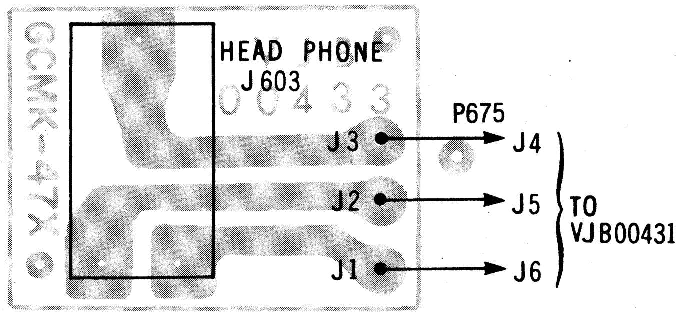
AUDIO MONITOR SW C.B. (VJB00431)

P 658

J8→	1	MIX — OUT
J1→	2	CH1 OUT
J2→	3	CH2 OUT
J7→	4	CH1 H.P OUT
J3→	5	CH2 H.P OUT

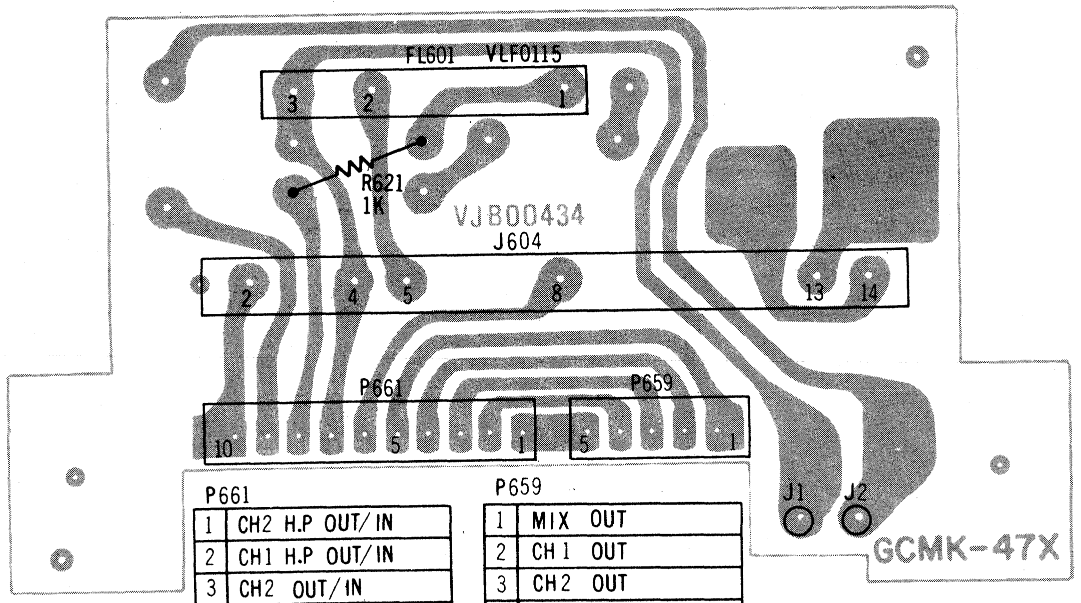

J1
R609 5600
CH1
MIX
CH2
R610
5600
VJB00431
J8
J7
J6
J5
J4
J2
J3
S605
AUDIO MONITOR
TO J603
HEADPHONE
JACK

HEADPHONES C.B. (VJB00506)


GCMK-47X
HEAD PHONE
J 603
P675
J3
J2
J1
J4
J5
J6
TO
VJB00431

93 NV8200

RF CONVERTER CONNECTOR C.B. (VJB00434)

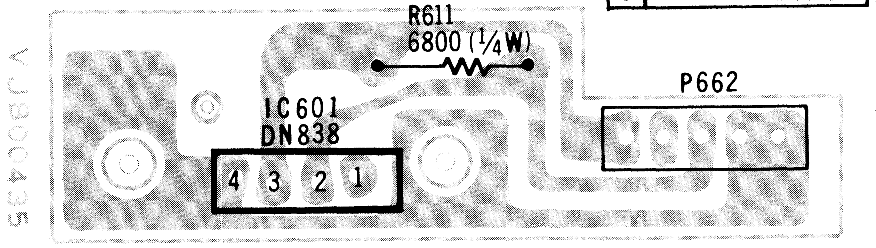

FL601 VLF0115
3
2
1
R621
1K
VJB00434
J604
2
4
5
8
13
14
P661
P659
10
5
1
5
1
J1
J2
GCMK-47X

P661	
1	CH2 H.P OUT/IN
2	CH1 H.P OUT/IN
3	CH2 OUT/IN
4	CH1 OUT/IN
5	MIX OUT
6	+ 9 V
7	GND
8	VIDEO IN
9	
10	AUDIO IN

P659	
1	MIX OUT
2	CH 1 OUT
3	CH 2 OUT
4	CH1 H.P OUT
5	CH2 H.P OUT

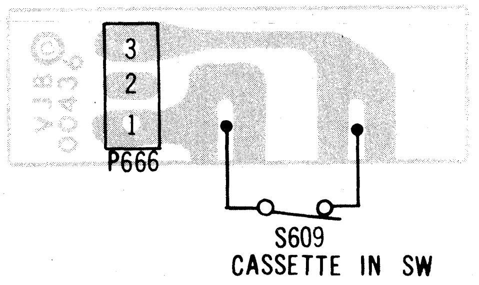
REEL SENSOR C.B. (VJB00435)

P662	
1	OUT
2	
3	+12V
4	GND
5	


VJB00435
R611
6800 (1/4W)
IC601
DN838
4 3 2 1
P662

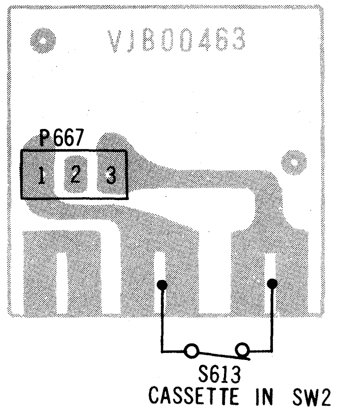
CASSETTE IN SW C.B. (VJB00436)

P666	
1	CASSETTE IN
2	
3	GND


VJB00436
3
2
1
P666
S609
CASSETTE IN SW

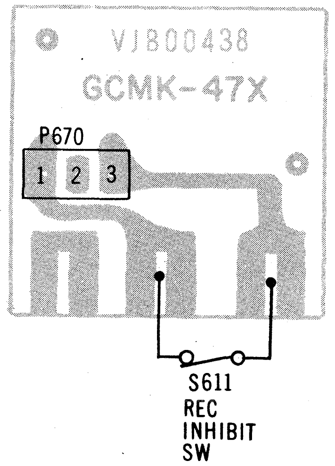
REC INHIBIT SW C.B. (VJB00438)

P667	
1	CASSETTE IN
2	
3	GND

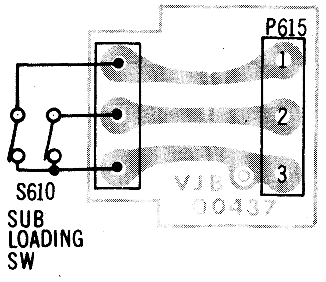

VJB00463
P667
1 2 3
S613
CASSETTE IN SW2

CASSETTE IN SW 2 C.B. (VJB00463)

P670	
1	GND
2	
3	REC INHIBIT


VJB00438
GCMK-47X
P670
1 2 3
S611
REC
INHIBIT
SW

SUB LOADING SW C.B. (VJB00437)

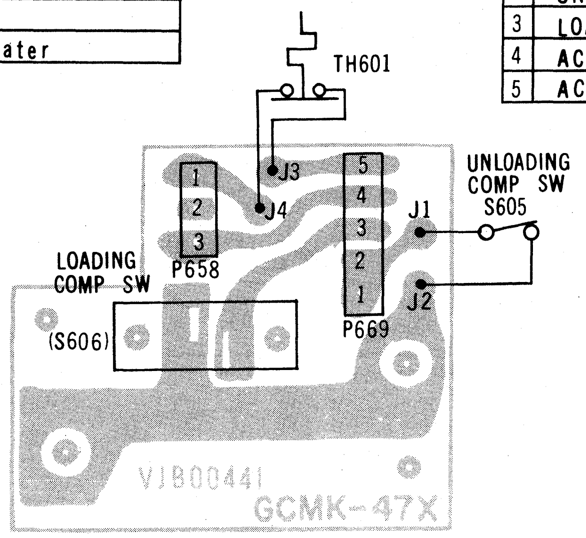

P615
1
2
3
S610
SUB
LOADING
SW
VJB
00437

P615	
1	SUB UNLOADING SW
2	SUB LOADING SW
3	GND

LOADING MOTOR & DEW SENSOR C.B. (VJB00477)

P658	
1	Heater
2	
3	Heater

1	UNLOADING END
2	UNLOADING END
3	LOADING END
4	AC16V IN
5	AC16V IN


TH601
J3
J4
1
2
3
P658
5
4
3
2
1
P669
J1
J2
UNLOADING
COMP SW
S605
LOADING
COMP SW
(S606)
VJB00441
GCMK-47X

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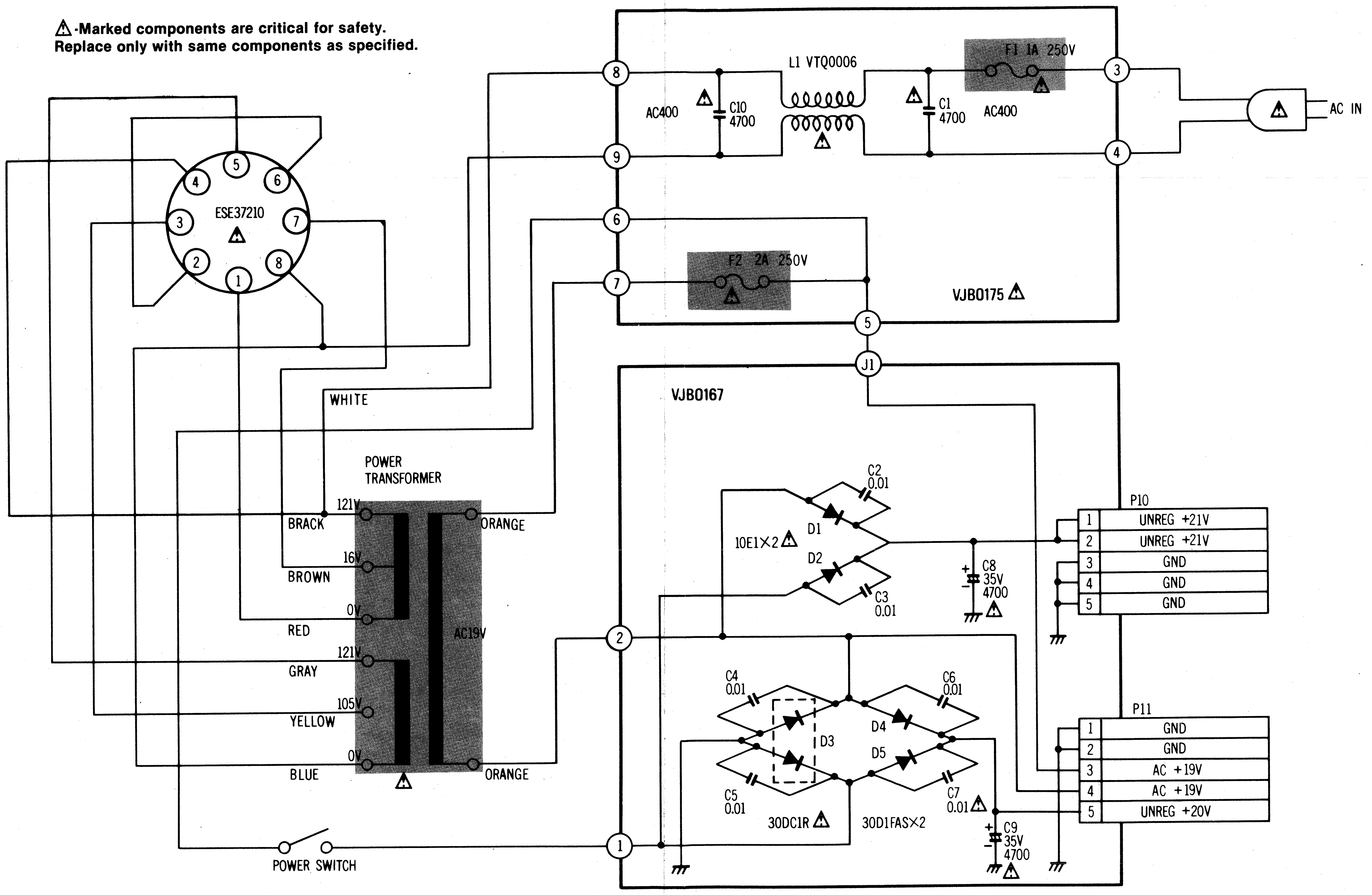
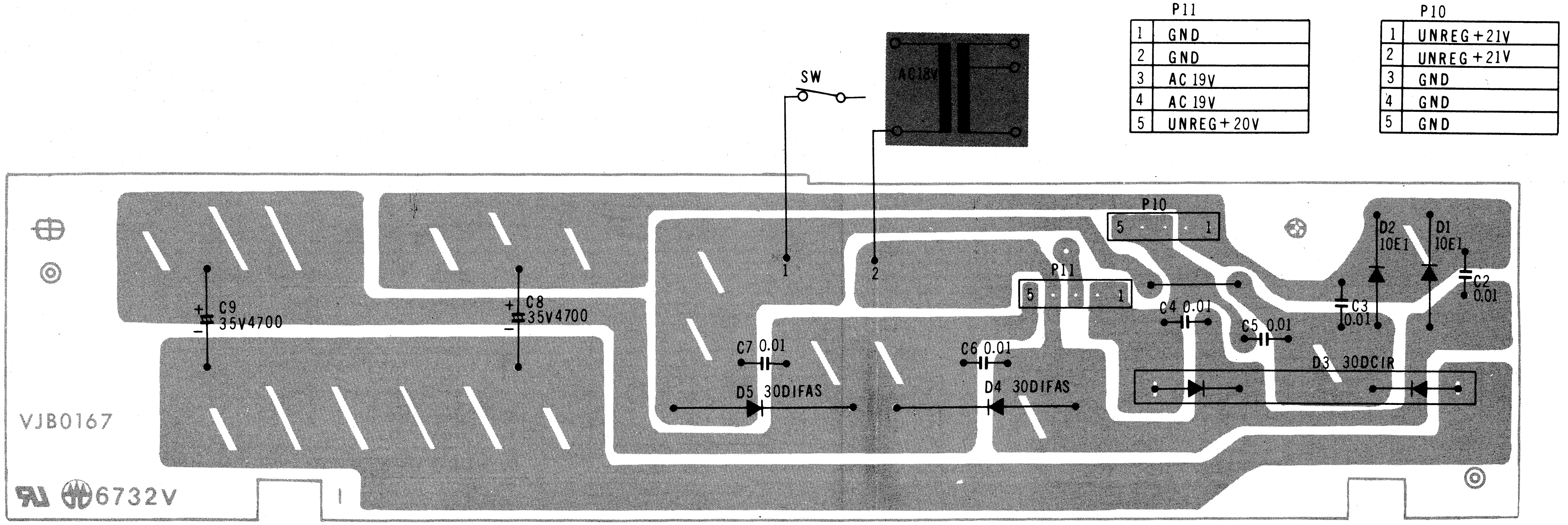
POWER SUPPLY & LINE FILTER SCHEMATIC DIAGRAM

⚠-Marked components are critical for safety.
Replace only with same components as specified.



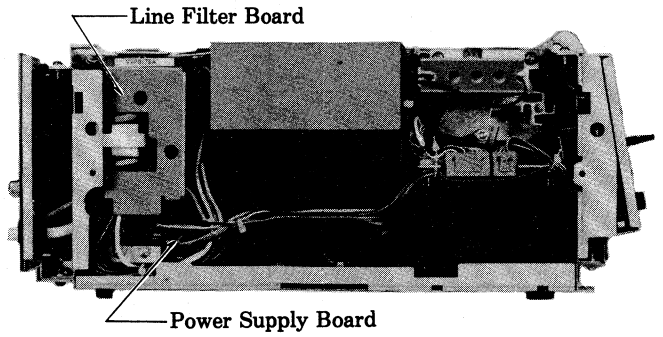
ESE37210 ⚠
1
2
3
4
5
6
7
8
L1 VTQ0006
AC400
C10
4700
C1
4700
AC400
F1 1A 250V
AC IN
F2 2A 250V
VJB0175 ⚠
J1
VJB0167
WHITE
POWER
TRANSFORMER
121V
BRACK
16V
BROWN
0V
RED
121V
GRAY
105V
YELLOW
0V
BLUE
ORANGE
AC19V
ORANGE
POWER SWITCH
C2
0.01
D1
10E1×2 ⚠
D2
C3
0.01
C8
35V
4700
P10
UNREG +21V
UNREG +21V
GND
GND
GND
C4
0.01
C6
0.01
D3
D4
D5
C5
0.01
30DC1R ⚠
30D1FAS×2
C7
0.01 ⚠
C9
35V
4700
P11
GND
GND
AC +19V
AC +19V
UNREG +20V

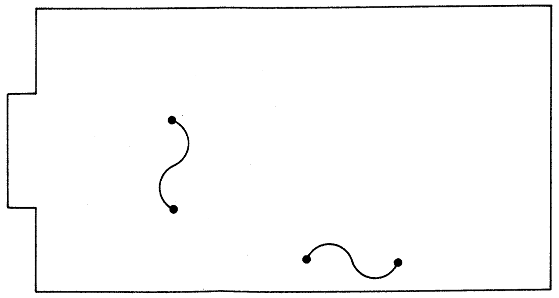
POWER SUPPLY CIRCUIT BOARD (VEP0167A)


P11
1 GND
2 GND
3 AC 19V
4 AC 19V
5 UNREG+20V
P10
1 UNREG+21V
2 UNREG+21V
3 GND
4 GND
5 GND
SW
AC18V
1
2
P10
5
1
P11
5
1
D2
10E1
D1
10E1
C2
0.01
C3
0.01
C4 0.01
C5 0.01
D3 30DC1R
C9
35V4700
C8
35V4700
C7 0.01
C6 0.01
D5 30D1FAS
D4 30D1FAS
VJB0167
6732V

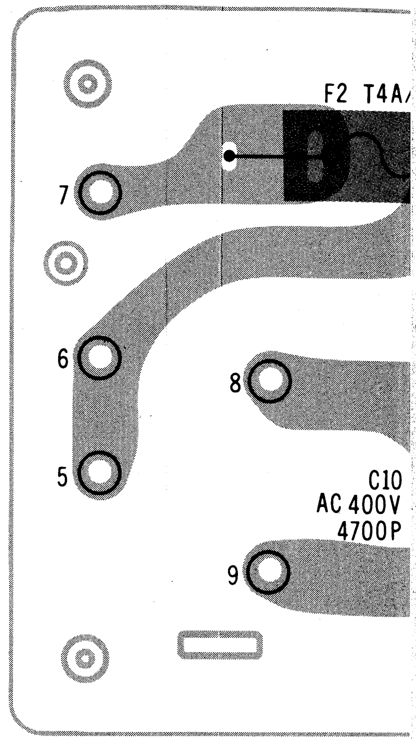
P10 Power Supply & Line Filter (VEP0167A)		
PIN NO.	SIGNAL NAME	DESTINATION
1	Unreg +21V	P221-12 (Chrominance Process)
2	Unreg +21V	P613-2 (System Control II)
3	GND	P670-1 (Rec Inhibit SW)
4	GND	J606-12
5	GND	—

P11 Power Supply & Line Filter (VEP0167A)		
PIN NO.	SIGNAL NAME	DESTINATION
1	GND	—
2	GND	—
3	AC 19V	P669-5 (Loading Comp SW)
4	AC 19V	P669-4 (Loading Comp SW)
5	Unreg +20V	P620-3 (System Control II)


Line Filter Board
Power Supply Board



LINE FILTER CIR


F2 T4A
7
6
5
8
9
C10
AC 400V
4700P

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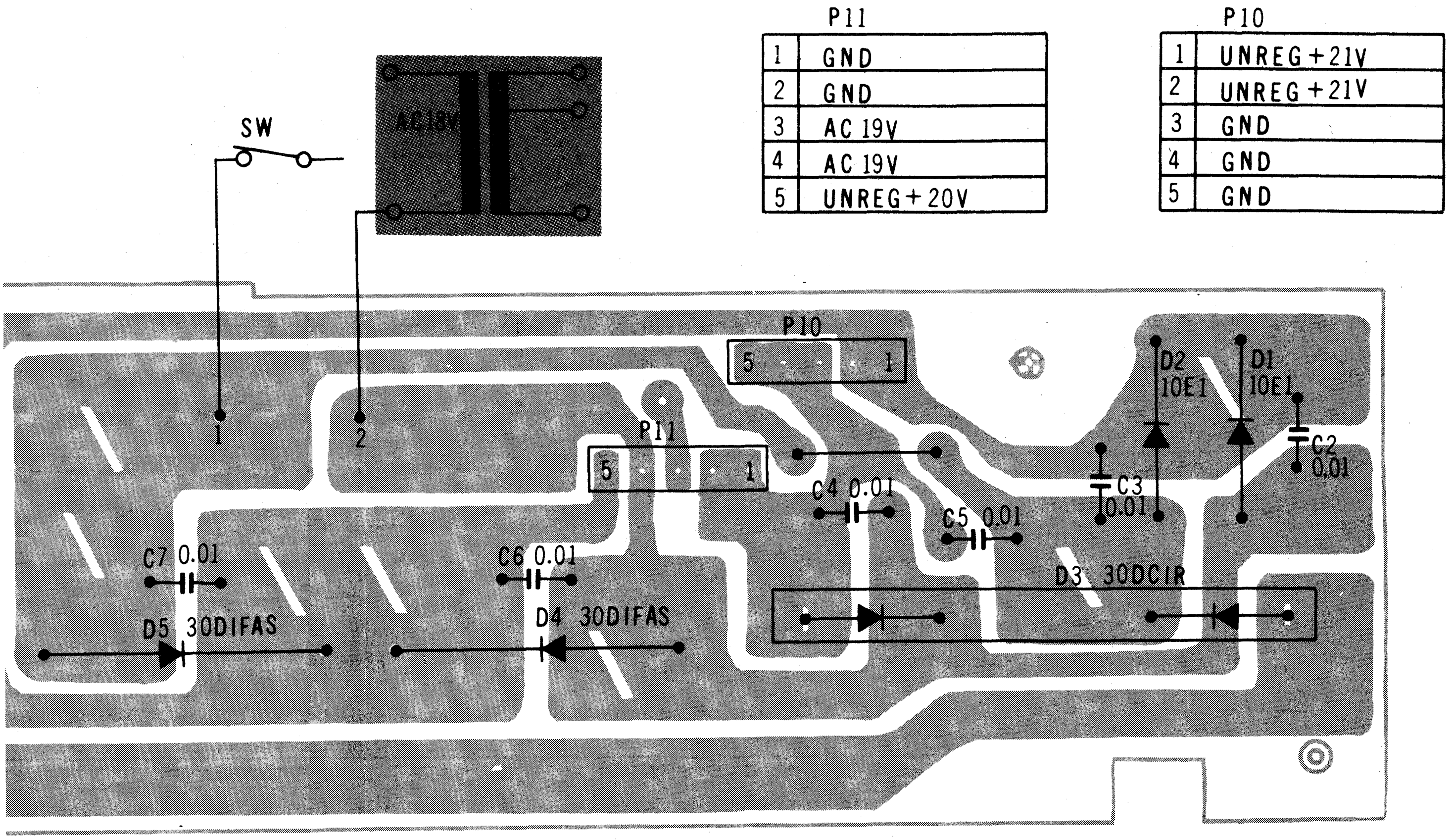
67A)


SW
AC18V
P10
5
1
P11
5
1
1
2
C7 0.01
D5 30DIFAS
C6 0.01
D4 30DIFAS
C4 0.01
C5 0.01
D3 30DCIR
C3 0.01
D2 10E1
D1 10E1
C2 0.01

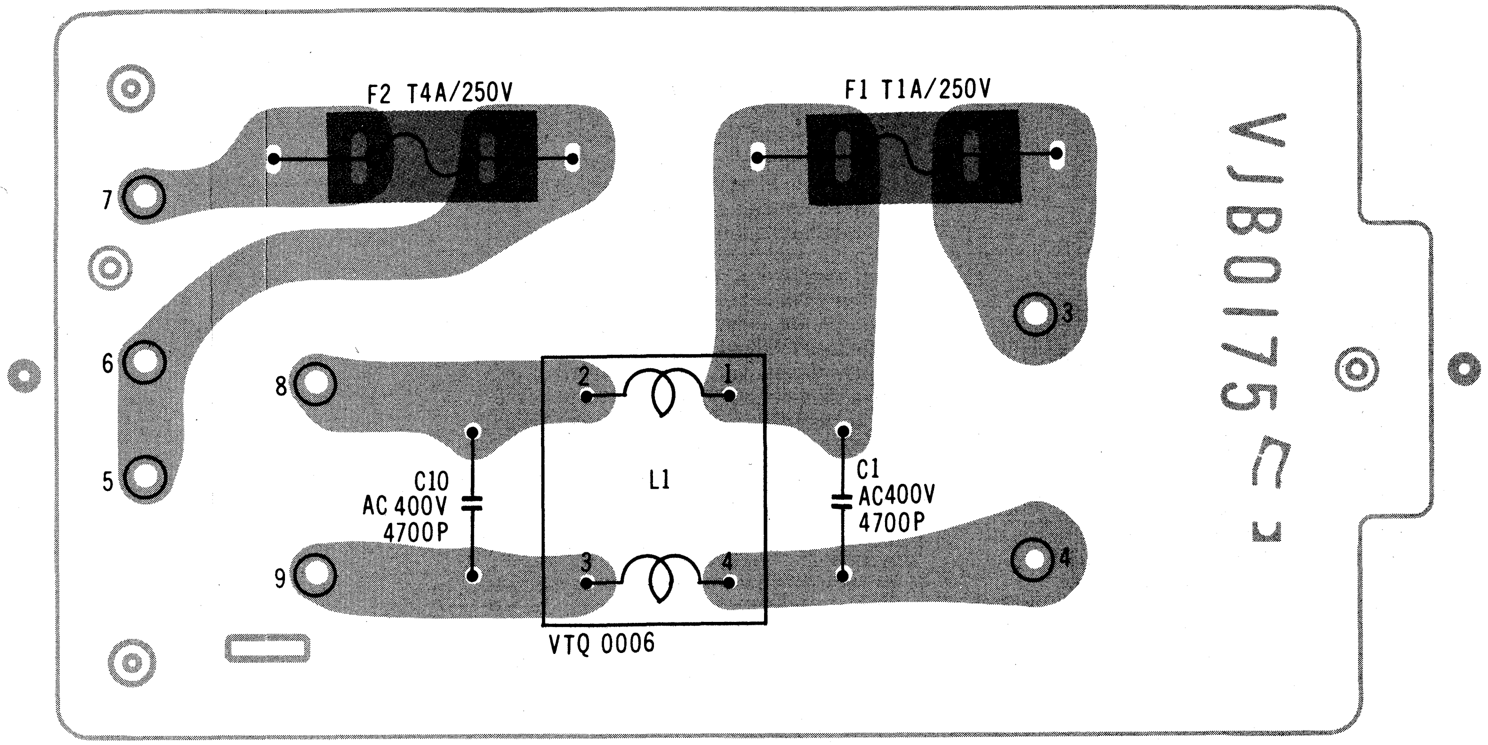
P11

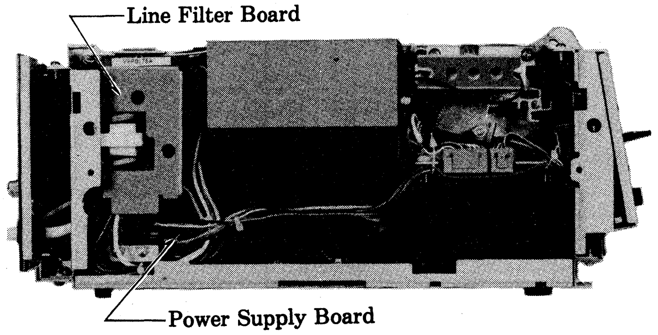
1	GND
2	GND
3	AC 19V
4	AC 19V
5	UNREG+20V

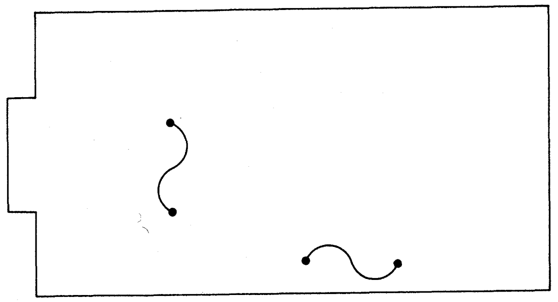
P10

1	UNREG+21V
2	UNREG+21V
3	GND
4	GND
5	GND

LINE FILTER CIRCUIT BOARD (VEP0175A)


F2 T4A/250V
F1 T1A/250V
VJB0175
7
6
5
8
9
3
4
2
1
3
4
L1
C10
AC 400V
4700P
C1
AC400V
4700P
VTQ 0006


Line Filter Board
Power Supply Board



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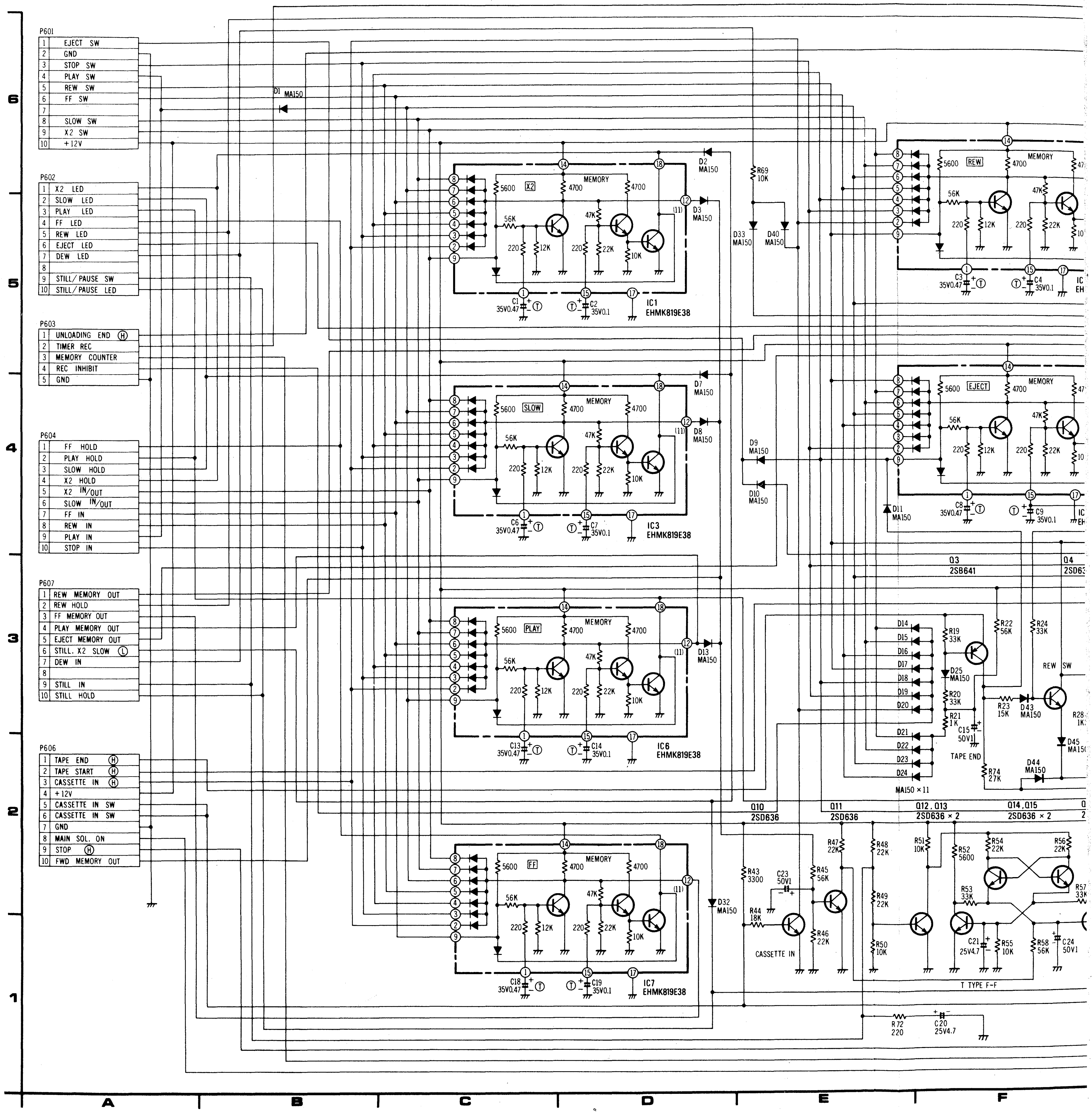
SYSTEM CONTROL CIRCUIT TERMINALS

SYSTEM CONTROL I

Note: Low ......Ground.
High......Approx. 12V.

TERMINAL NO.	NAME	OPERATION
P601-1	EJECT SW	Low, when the Eject button is pressed.
P601-3	STOP SW	Low, when the Stop button is pressed.
P601-4	PLAY SW	Low, when the Play button is pressed.
P601-5	REW SW	Low, when the Rew button is pressed.
P601-6	FF SW	Low, when the FF button is pressed.
P601-8	SLOW SW	Low, when the Slow button is pressed.
P601-9	X2 SW	Low, when the X2 button is pressed.
P602-1	X2 LED	Low, in the X2 mode, (lights the LED).
P602-2	SLOW LED	Low, in the Slow mode, (lights the LED).
P602-3	PLAY LED	Low, in the Play mode, (lights the LED).
P602-4	FF LED	Low, in the FF mode, (lights the LED).
P602-5	REW LED	Low, in the Rew mode, (lights the LED).
P602-6	EJECT LED	Low, in the Eject mode, (lights the LED).
P602-7	DEW LED	High, when moisture is detected, (lights the LED).
P602-9	STILL/PAUSE SW	Low, when the Still/Pause button is pressed.
P602-10	STILL/PAUSE LED	Low, in the Still/Pause mode, lights the LED.
P603-1	UNLOADING END Ⓗ	High, when unloading is ended.
P603-2	TIMER REC	High, when the Timer Rec SW is the Rec mode.
P603-3	MEMORY COUNTER	Low, when the Memory Counter SW is ON.
P603-4	REC INHIBIT	Low, when a cassette is used without Rec, tab.
P604-1	FF HOLD	Low, when the FF button is pressed.
P604-2	PLAY HOLD	Low, when the Play button is pressed.
P604-3	SLOW HOLD	Low, when the Slow button is pressed.
P604-4	X2 HOLD	Low, when the X2 button is pressed.
P604-5	X2 IN/OUT	Low, when the X2 button is pressed.
P604-6	SLOW IN/OUT	Low, when the Slow button is pressed.
P604-7	FF IN	Low, when Remote controller or search controller is used (it comes from Pin 34-(3)).
P604-8	REW IN	Low, when Remote controller or search controller is used (it comes from Pin 34-(4)).
P604-9	PLAY OUT	Low, when the Play SW is pressed.
P604-10	STOP IN	Low, when Remote controller or search controller is used (it comes from Pin 34-(5)).
P607-1	REW MEMORY OUT	High, when the Rew button is pressed.
P607-2	FF MEMORY OUT	High, when the FF button is pressed.
P607-3	REW HOLD	Low, when the Rew button is pressed.
P607-4	PLAY MEMORY OUT	High, when the Play button is pressed.
P607-5	EJECT MEMORY OUT	High, when the Eject button is pressed.
P607-6	STILL, X2, SLOW Ⓛ	Low, when the Still, X2, or Slow button is pressed.
P607-7	DEW IN	High, when moisture is detected.
P607-8	STILL IN	Low, when Remote controller or search controller is used (it comes from Pin 34-(7)).
P607-10	STILL HOLD	Low, when the Still/Pause SW is pressed.
P606-1	TAPE END Ⓗ	High, when the tape end is reached.
P606-2	TAPE START Ⓗ	High, during tape start.
P606-3	CASSETTE IN Ⓗ	High, when a cassette is inserted.
P606-5	CASSETTE IN SW	Low, when a cassette is inserted.
P606-6	CASSETTE IN SW	Low, when a cassette is inserted.
P606-8	MAIN SOL ON	High, when the Play, FF, Rew or Eject button is pressed.
P606-9	STOP Ⓗ	High, when the Stop button is pressed.
P606-10	FWD MEMORY OUT	High, when the Play button is pressed.
P656-1	TIMER REC (SW)	High, when the Timer Rec SW is the Rec mode.
P656-2	TIMER OFF (SW)	High, when the Timer Rec SW is OFF.
P656-3	TIMER SW COMMON	High, when the Timer Rec SW is OFF.
P656-4	TIMER PLAY SW	High, when the Timer Play SW is ON.
P657-1	REW SW	Low, when the Rew SW is ON.
P657-2	REPEAT SW	Low, when the Repeat SW is ON.

SYSTEM CONTROL I SCHEMATIC DIAGRAM


6
5
4
3
2
1
A
B
C
D
E
F
P601
1 EJECT SW
2 GND
3 STOP SW
4 PLAY SW
5 REW SW
6 FF SW
7
8 SLOW SW
9 X2 SW
10 +12V
P602
1 X2 LED
2 SLOW LED
3 PLAY LED
4 FF LED
5 REW LED
6 EJECT LED
7 DEW LED
8
9 STILL/PAUSE SW
10 STILL/PAUSE LED
P603
1 UNLOADING END Ⓗ
2 TIMER REC
3 MEMORY COUNTER
4 REC INHIBIT
5 GND
P604
1 FF HOLD
2 PLAY HOLD
3 SLOW HOLD
4 X2 HOLD
5 X2 IN/OUT
6 SLOW IN/OUT
7 FF IN
8 REW IN
9 PLAY IN
10 STOP IN
P607
1 REW MEMORY OUT
2 REW HOLD
3 FF MEMORY OUT
4 PLAY MEMORY OUT
5 EJECT MEMORY OUT
6 STILL. X2 SLOW Ⓛ
7 DEW IN
8
9 STILL IN
10 STILL HOLD
P606
1 TAPE END Ⓗ
2 TAPE START Ⓗ
3 CASSETTE IN Ⓗ
4 +12V
5 CASSETTE IN SW
6 CASSETTE IN SW
7 GND
8 MAIN SOL. ON
9 STOP Ⓗ
10 FWD MEMORY OUT
D1 MA150
IC1 EHMK819E38
IC3 EHMK819E38
IC6 EHMK819E38
IC7 EHMK819E38
MEMORY
X2
SLOW
PLAY
FF
REW
EJECT
D2 MA150
D3 MA150
D7 MA150
D8 MA150
D13 MA150
D9 MA150
D10 MA150
D11 MA150
D32 MA150
D33 MA150
D40 MA150
R69 10K
Q3 2SB641
Q10 2SD636
Q11 2SD636
Q12, Q13 2SD636 × 2
Q14, Q15 2SD636 × 2
MA150 × 11
REW SW
TAPE END
CASSETTE IN
T TYPE F-F
R72 220
C20 25V4.7

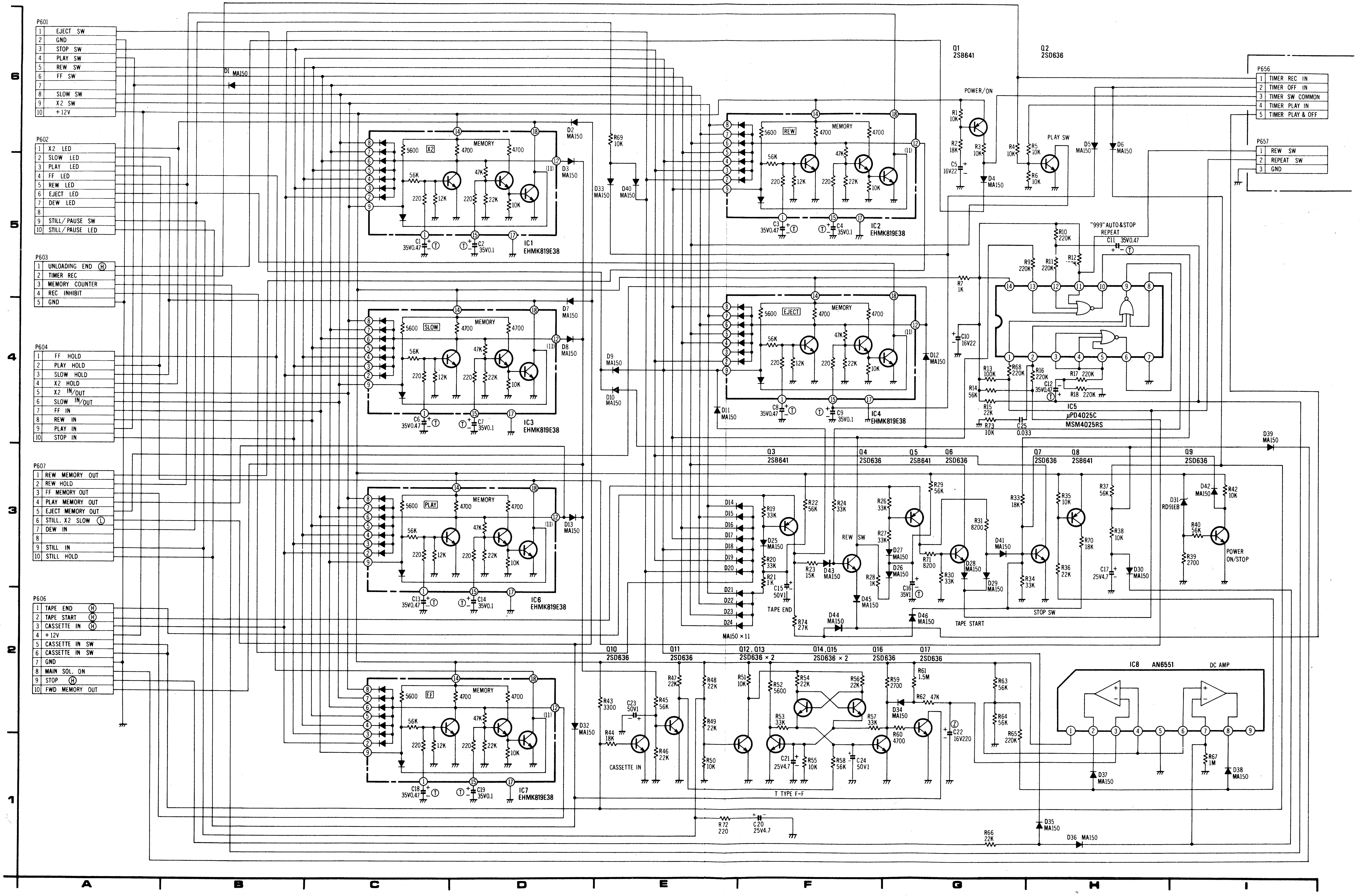
SYSTEM CONTROL I SCHEMATIC DIAGRAM

nd.
ox. 12V.

used

used

sed.



P601
1 EJECT SW
2 GND
3 STOP SW
4 PLAY SW
5 REW SW
6 FF SW
7
8 SLOW SW
9 X2 SW
10 +12V
P602
1 X2 LED
2 SLOW LED
3 PLAY LED
4 FF LED
5 REW LED
6 EJECT LED
7 DEW LED
8
9 STILL/PAUSE SW
10 STILL/PAUSE LED
P603
1 UNLOADING END Ⓗ
2 TIMER REC
3 MEMORY COUNTER
4 REC INHIBIT
5 GND
P604
1 FF HOLD
2 PLAY HOLD
3 SLOW HOLD
4 X2 HOLD
5 X2 IN/OUT
6 SLOW IN/OUT
7 FF IN
8 REW IN
9 PLAY IN
10 STOP IN
P607
1 REW MEMORY OUT
2 REW HOLD
3 FF MEMORY OUT
4 PLAY MEMORY OUT
5 EJECT MEMORY OUT
6 STILL, X2 SLOW Ⓛ
7 DEW IN
8
9 STILL IN
10 STILL HOLD
P606
1 TAPE END Ⓗ
2 TAPE START Ⓗ
3 CASSETTE IN Ⓗ
4 +12V
5 CASSETTE IN SW
6 CASSETTE IN SW
7 GND
8 MAIN SOL. ON
9 STOP Ⓗ
10 FWD MEMORY OUT
P656
1 TIMER REC IN
2 TIMER OFF IN
3 TIMER SW COMMON
4 TIMER PLAY IN
5 TIMER PLAY & OFF
P657
1 REW SW
2 REPEAT SW
3 GND
D1 MA150
IC1 EHMK819E38
IC2 EHMK819E38
IC3 EHMK819E38
IC4 EHMK819E38
IC6 EHMK819E38
IC7 EHMK819E38
MEMORY
X2
REW
SLOW
EJECT
PLAY
FF
Q1 2SB641
Q2 2SD636
POWER/ON
PLAY SW
"999" AUTO&STOP REPEAT
IC5 μPD4025C MSM4025RS
Q3 2SB641
Q4 2SD636
Q5 2SB641
Q6 2SD636
Q7 2SD636
Q8 2SB641
Q9 2SD636
REW SW
TAPE END
TAPE START
STOP SW
POWER ON/STOP
MA150 ×11
Q10 2SD636
Q11 2SD636
Q12, Q13 2SD636 × 2
Q14, Q15 2SD636 × 2
Q16 2SD636
Q17 2SD636
IC8 AN6551
DC AMP
CASSETTE IN
T TYPE F-F
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I

P601 System Control I

PIN NO.	SIGNAL NAME	DESTINATION
1	Eject SW	P631 (Operation)
2	GND	P631 (Operation)
3	Stop SW	P631 (Operation)
4	Play SW	P631 (Operation)
5	REW SW	P631 (Operation)
6	F.F SW	P632 (Operation)
7	—	—
8	Slow SW	P632 (Operation)
9	X2 SW	P632 (Operation)
10	+12V	P632 (Operation)

P602 System Control

PIN NO.	SIGNAL NAME	DESTINATION
1	X2 LED	P632 (Operation)
2	Slow SW	P632 (Operation)
3	Play LED	P631 (Operation)
4	F.F LED	P632 (Operation)
5	REW LED	P631 (Operation)
6	Eject LED	P631 (Operation)
7	DEW LED	P631 (Operation)
8	—	—
9	Still SW	P632 (Operation)
10	Still LED	P632 (Operation)

P603 System Control I

PIN NO.	SIGNAL NAME	DESTINATION
1	Unloading End Ⓗ	P610-5 (System Control II)
2	Timer REC	P621-9 (Chrominance Process)
3	Memory Counter	Memory Counter SW
4	REC Inhibit	P621-7 (Chrominance Process)
5	GND	—

P604 System Control I

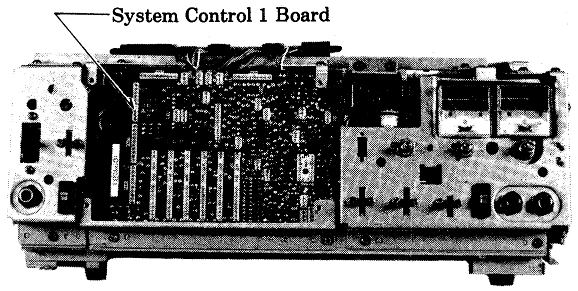
PIN NO.	SIGNAL NAME	DESTINATION
1	F.F Hold	
2	Play Hold	
3	Slow Hold	P614-4 (System Control II)
4	X2 Hold	P49-5 (Audio)
5	X2 IN/OUT	
6	Slow IN	
7	F.F IN	
8	REW IN	
9	Play IN	P622-8 (Chrominance Process)
10	Stop IN	

P606 System Control I

PIN NO.	SIGNAL NAME	DESTINATION
1	Tape End Ⓗ	P611-2 (System Control II)
2	Tape Start Ⓗ	P611-4 (System Control II)
3	Cassette IN Ⓗ	P614-1 (System Control II)
4	+12V	P622-5 (Chrominance Process)
5	Cassette IN SW	P666-1 (Cassette IN SW)
6	Cassette IN SW	
7	GND	—
8	Main Sol. ON	P610-7 (System Control II)
9	Stop Ⓗ	P609-8 (System Control II)
10	FWD Memory OUT	P610-4 (System Control II)

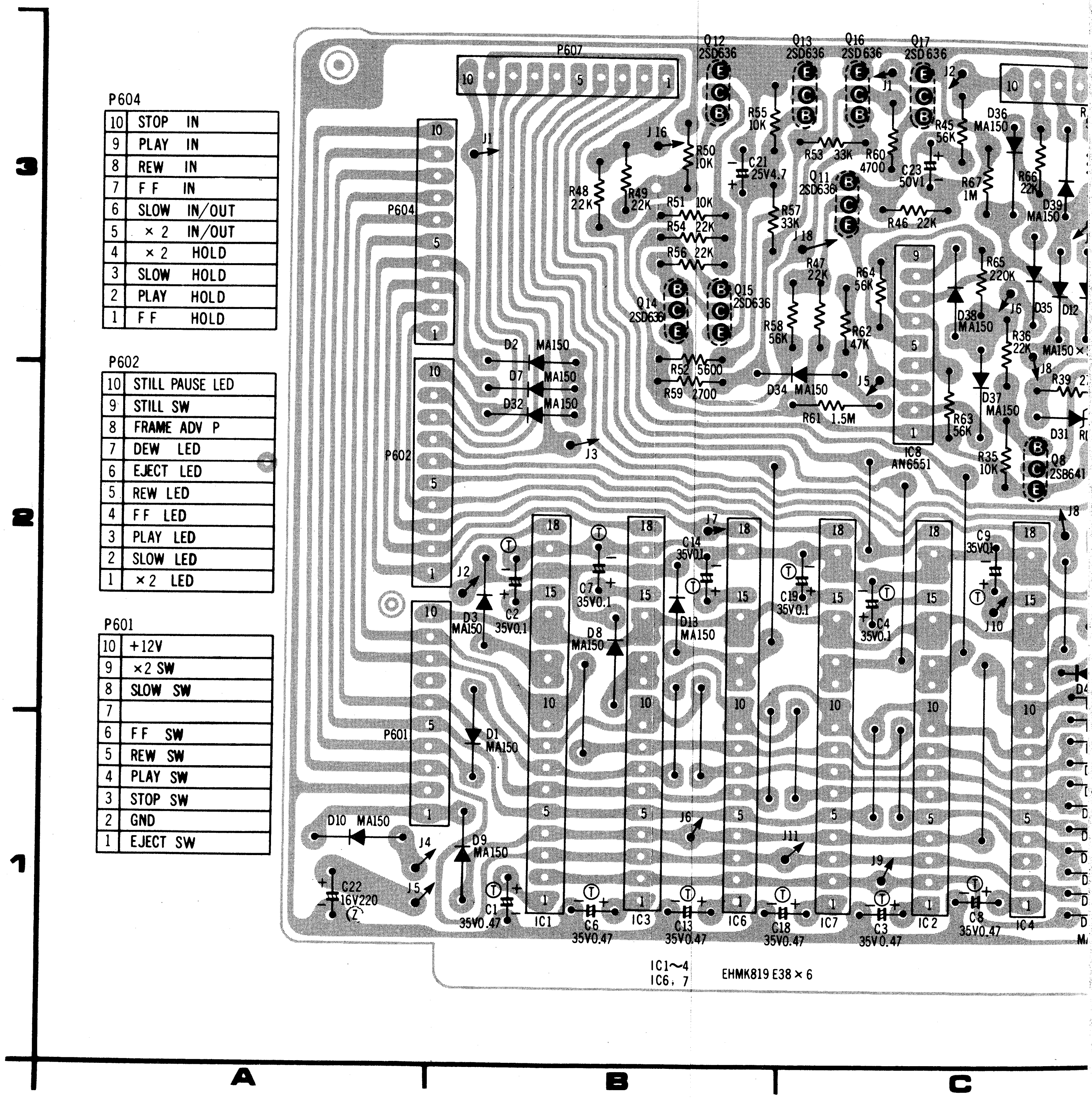
P607 System Control I

PIN NO.	SIGNAL NAME	DESTINATION
1	REW Memory OUT	P610-1 (System Control II)
2	REW Hold	
3	F.F Memory OUT	P610-2 (System Control II)
4	Play Memory OUT	P622-12 (Chrominance Process)
5	Eject Memory OUT	P610-3 (System Control II)
6	Still/X2/Slow Ⓛ	P22-5 (Servo)
7	DEW IN	P611-7 (System Control II)
8		
9	Still IN	
10	Still Hold	P618-7 (System Control II)

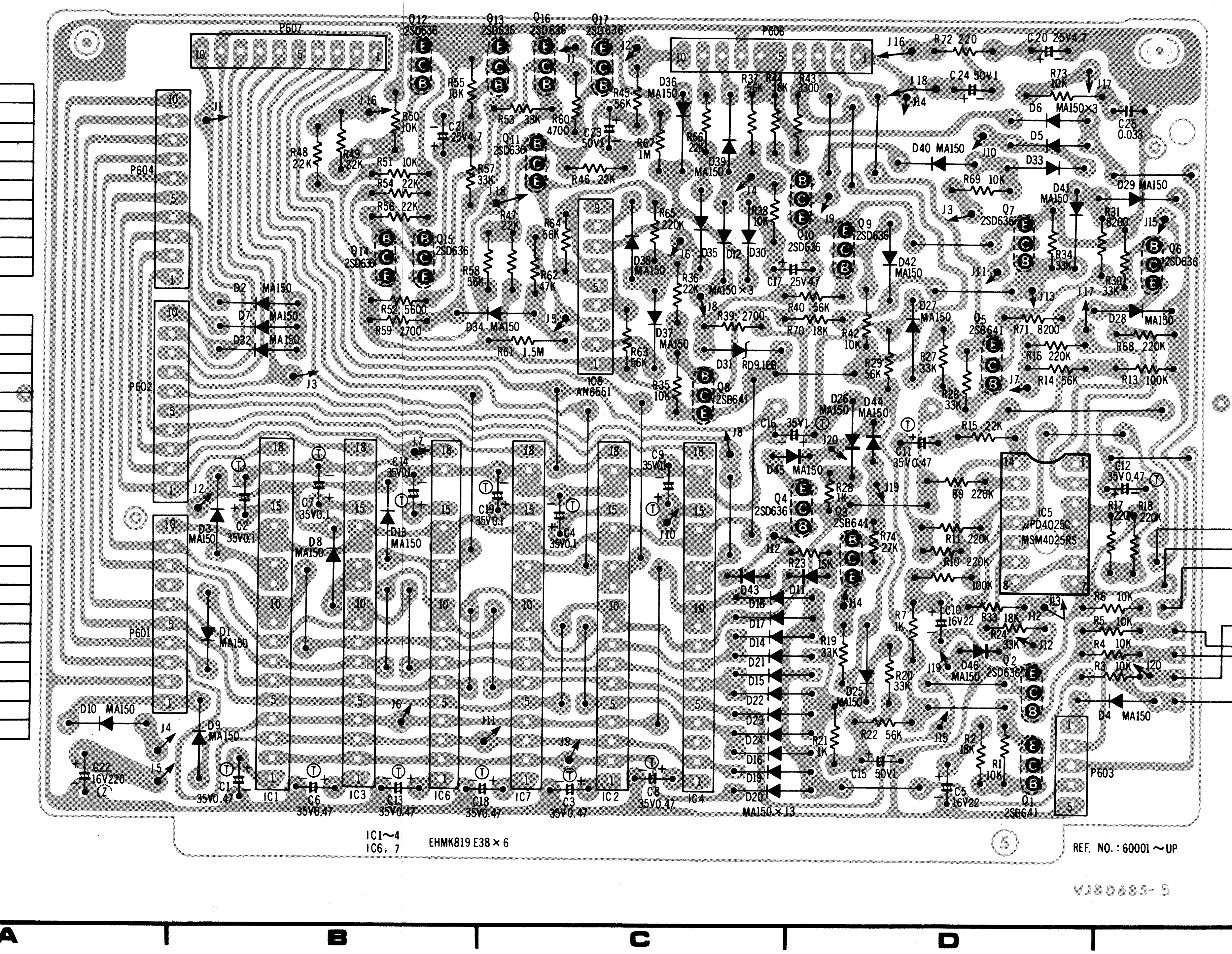

System Control 1 Board

System Control I	
Q1	D-1
Q2	D-1
Q3	D-2
Q4	D-2
Q5	D-2
Q6	E-3
Q7	D-3
Q8	C-2
Q9	D-3
Q10	D-3
Q11	C-3
Q12	B-3
Q13	C-3
Q14	B-3
Q15	B-3
Q16	C-3
Q17	C-3

SYSTEM CONTROL I CIRCUIT BOARD (VEP0685D1)


P604
10 STOP IN
9 PLAY IN
8 REW IN
7 F F IN
6 SLOW IN/OUT
5 × 2 IN/OUT
4 × 2 HOLD
3 SLOW HOLD
2 PLAY HOLD
1 F F HOLD
P602
10 STILL PAUSE LED
9 STILL SW
8 FRAME ADV P
7 DEW LED
6 EJECT LED
5 REW LED
4 FF LED
3 PLAY LED
2 SLOW LED
1 ×2 LED
P601
10 +12V
9 ×2 SW
8 SLOW SW
7
6 FF SW
5 REW SW
4 PLAY SW
3 STOP SW
2 GND
1 EJECT SW
P607
Q12 2SD636
Q13 2SD636
Q16 2SD636
Q17 2SD636
Q11 2SD636
Q14 2SD636
Q15 2SD636
Q8 2SB641
IC8 AN6551
D1 MA150
D2 MA150
D3 MA150
D7 MA150
D8 MA150
D9 MA150
D10 MA150
D13 MA150
D32 MA150
D34 MA150
D36 MA150
D37 MA150
D38 MA150
D39 MA150
R48 22K
R49 22K
R50 10K
R51 10K
R52 5600
R53 33K
R54 22K
R55 10K
R56 22K
R57 33K
R58 56K
R59 4700
R60 4700
R61 1.5M
R62 47K
R63 56K
R64 56K
R65 220K
R45 56K
R46 22K
R47 22K
R35 10K
R36 22K
R66 22K
R67 1M
C21 25V4.7
C23 50V1
C14 35V0.1
C7 35V0.1
C2 35V0.1
C19 35V0.1
C4 35V0.1
C9 35V0.1
C22 16V220
C1 35V0.47
C6 35V0.47
C13 35V0.47
C18 35V0.47
C3 35V0.47
C8 35V0.47
IC1
IC3
IC6
IC7
IC2
IC4
IC1~4
IC6, 7
EHMK819 E38 × 6
3
2
1
A
B
C

TROL I CIRCUIT BOARD (VEP0685D1)


P607
P606
P604
P602
P601
P603
IC1
IC2
IC3
IC4
IC5 μPD4025C MSM4025RS
IC6
IC7
IC8 AN6551
MA150×13
MA150×3
IC1~4 IC6, 7
EHMK819 E38×6
⑤
REF. NO.: 60001 ~UP
VJB0685-5
A
B
C
D
E

P607

10	STILL HOLD
9	STILL IN
8	FRAME AD
7	DEW IN
6	STILL/×2 SLOW Ⓛ
5	EJECT MEMORY OUT
4	PLAY MEMORY OUT
3	F F MEMORY OUT
2	REW HOLD
1	REW MEMORY OUT

P606

10	FWD MEMORY OUT
9	STOP Ⓗ
8	MAIN SOL ON
7	GND
6	CASSETTE IN SW
5	CASSETTE IN SW
4	+12 V
3	CASSETTE IN Ⓗ
2	TAPE START Ⓗ
1	TAPE END Ⓗ

P603

1	UNLOADING END Ⓗ
2	TIMER REC
3	MEMORY COUNTER
4	REC INHIBIT
5	GND

P657

1	REW SW
2	REPEAT SW
3	GND

P656

1	TIMER REC (IN)
2	TIMER OFF (IN)
3	TIMER SW COMMON
4	TIMER PLAY IN
5	

(98) NV 8200

SYSTEM CONTROL II DC VOLTAGE CHART

TRANSISTOR REF NO. / MODE	Q1			Q2			Q3			Q4			Q5			Q6		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0	10.1	0	0.6	0	0	0.7	0	0	10.9	11.8	10.3	9.9	11.8	9.2	1.5	0.8	0.8
REC	0	10.1	0	0.6	0	0	0.7	0	0	10.9	11.9	10.3	9.9	11.9	9.2	1.5	0.8	0.8
FF	0.6	0.1	0	0.6	0	0	0	11.7	0	0.1	11.8	0	11.3	11.8	10.6	1.5	0.8	0.8
REW	0.6	0.1	0	0.6	0	0	0	11.7	0	0.1	11.8	0	11.3	11.8	10.6	1.5	0.8	0.8

TRANSISTOR REF NO. / MODE	Q7			Q8			Q9			Q10			Q11			Q12		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.8	0.1	0	0.7	0.1	0	0.1	17.5	0.1	0.1	17.5	0	0	11.9	0	0	16.1	0
REC	0.8	0.1	0	0.7	0.1	0	0.1	17.5	0.1	0.1	17.5	0	0	11.9	0	0	16.2	0
FF	0.8	0.1	0	0.7	0.1	0	0.1	17.3	0.1	0.1	17.5	0	0	11.9	0	0	18.6	0.1
REW	0.8	0.1	0	0.7	0.1	0	0.1	17.3	0.1	0.1	17.5	0	0	11.9	0	0	18.6	0.1

TRANSISTOR REF NO. / MODE	Q13			Q14			Q15			Q16			Q17			Q18		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0	16.0	0	15.3	16.0	16.0	0.7	0	0	11.6	15.0	11.0	0.7	0	0	0.2	3.0	0
REC	0	16.2	0	15.4	16.2	16.3	0.7	0	0	11.6	15.0	11.0	0.7	0	0	0.2	3.0	0
FF	0	18.6	0	18.6	0.1	18.5	0	18.8	0	11.6	11.1	10.9	0	5.2	0	0.2	3.0	0
REW	0	18.6	0	18.6	0.1	18.5	0	18.9	0	11.6	11.1	10.9	0	0.9	0	0.2	3.0	0

TRANSISTOR REF NO. / MODE	Q19			Q20			Q21			Q22			Q23			Q24		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.6	12.0	0.1	0.1	11.9	0	11.7	8.4	12.0	0	11.9	0	0.3	11.2	0	11.2	1.5	11.2
REC	0.6	12.0	0.1	0.1	11.9	0	11.7	8.4	12.0	0	11.9	0	0.3	11.2	0	11.2	1.5	11.2
FF	0.6	12.0	0	0	11.8	0	11.3	11.9	12.0	0.5	11.8	0	0	11.2	0	11.2	1.5	11.2
REW	0.6	12.0	0	0	11.8	0	11.3	11.9	12.0	0	11.8	0	0	11.2	0	11.2	1.5	11.2

TRANSISTOR REF NO. / MODE	Q25			Q26			Q27			Q28			Q29			Q30		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0	1.3	0	11.2	1.5	11.2	0	1.5	0	0.3	11.2	0	0	11.2	11.2	11.2	1.1	11.2
REC	0	1.4	0	11.2	1.5	11.2	0	1.5	0	0.3	11.2	0	0	11.2	0	11.2	1.1	11.2
FF	0	1.4	0	11.2	1.5	11.2	0	1.5	0	0.3	11.2	0	0	11.2	0	11.2	1.2	11.2
REW	0	1.4	0	11.2	1.5	11.2	0	1.5	0	0.3	11.2	0	0	11.2	0	11.2	1.2	11.2

TRANSISTOR REF NO. / MODE	Q31			Q32			Q33			Q34			Q35			Q36		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0	1.1	0	11.2	1.1	11.2	0	1.1	0	0	11.2	0	18.4	11.2	18.9	11.7	18.4	11.2
REC	0	1.1	0	11.2	1.1	11.2	0	1.1	0	0	11.2	0	18.3	11.2	18.9	11.7	18.3	11.2
FF	0	1.2	0	11.2	1.2	11.2	0	1.2	0	0	11.2	0	18.0	11.2	18.7	11.7	18.2	11.2
REW	0	1.2	0	11.2	1.2	11.2	0	1.2	0	0	11.2	0	18.0	11.2	18.6	11.7	18.2	11.2

TRANSISTOR REF NO. / MODE	Q37			Q38			Q39			Q40			Q41			Q42		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.3	11.4	0	10.9	11.9	10.3	0.7	0	0	0	1.6	0	0	10.4	0	0.6	0	0
REC	0.3	11.4	0	10.9	11.9	10.3	0.6	0	0	0	1.6	0	0	10.4	0	0.6	0	0
FF	0.1	11.4	0	10.9	11.9	10.3	0.6	0	0	0	1.6	0	0	0	0	0.6	0	0
REW	0	11.4	0	10.9	11.9	10.3	0.6	0	0	0	1.6	0	0	0	0	0.6	0	0

TRANSISTOR REF NO. / MODE	Q43			Q44			Q45			Q47			Q48			Q49		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.6	0	0	0	11.4	0	0	11.9	0	—	—	0	11.1	0	9.8	0	11.9	0
REC	0.6	0	0	0	11.5	0	0	11.9	0	—	—	0	11.1	0	9.7	0	11.9	0
FF	0.6	0	0	0	11.5	0	0	11.8	0	−0.5	0	0	8.2	1.4	8.8	8.8	11.2	8.2
REW	—	0	0	0	11.5	0	0.5	11.8	0	−0.5	0	0	8.2	1.2	8.8	8.8	11.2	8.2

TRANSISTOR REF NO. / MODE	Q50			Q51			Q52			Q53			Q54			Q55		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	11.8	0.4	11.9	0.7	0	0	0.1	4.7	0	0.7	0	0	0.7	0	0	0	11.8	0
REC	11.8	0.7	11.9	0.7	0.1	0	0.1	4.7	0	0.7	0	0	0.7	0	0	0	11.9	0
FF	11.2	11.8	11.9	0.7	0.1	0	0.1	5.4	0	0.7	0.1	0	0.7	0	0	0	11.8	0
REW	11.2	11.8	11.8	0.7	0.1	0	0.1	5.4	0	0.7	0.1	0	0.7	0	0	0	11.8	0

TRANSISTOR REF NO. / MODE	Q56			Q57			Q58			Q59			Q60			Q61		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.7	0	0	0	6.7	0	0.7	0	0	0.5	1.5	0.8	1.5	0.5	0.8	0.8	11.9	0.4
REC	0.7	0	0	0	6.7	0	0.7	0.1	0	0.5	1.5	0.8	1.5	0.8	0.8	0.8	11.9	0.4
FF	0.7	0	0	0	6.7	0	0.7	0.1	0	0.5	1.5	0.8	1.5	0.8	0.8	0.8	11.9	0.4
REW	0.7	0	0	0	6.7	0	0.7	0.1	0	0.5	1.5	0.8	1.5	0.8	0.8	0.8	11.9	0.4

TRANSISTOR REF NO. / MODE	Q62			Q63			Q64			Q65			Q66			Q67		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	11.5	0	7.5	11.2	0	7.5	0	0.7	0	0.7	0	0	0.7	0.1	0	0.1	5.3	0
REC	11.5	0	7.5	11.2	0	7.5	0	0.7	0	0.7	0	0	0.7	0.1	0	0.1	5.3	0
FF	11.5	0	7.5	11.1	0	7.5	0	0.7	0	0.7	0	0	0.7	0.1	0	0.1	5.8	0
REW	11.5	0	7.5	11.1	0	7.5	0	0.7	0	0.7	0	0	0.7	0.1	0	0.1	5.8	0

TRANSISTOR REF NO. / MODE	Q68			Q69			Q70			Q71			Q72			Q73		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.7	0	0	0.7	15.0	0	0	11.9	0	11.1	11.8	11.9	12.6	18.2	12.0	6.9	12.7	6.3
REC	0.7	0	0	0.7	0	0	0	11.9	0	11.1	11.8	11.9	12.7	17.8	12.0	6.9	12.7	6.3
FF	0.7	0	0	0.7	0	0	0	11.8	0	11.7	0	11.8	12.7	17.8	12.0	6.9	12.7	6.3
REW	0.7	0	0	0.7	0	0	0	11.8	0	11.7	0	11.8	12.7	17.9	12.0	6.9	12.7	6.3

SYSTEM CONTROL II DC VOLTAGE CHART

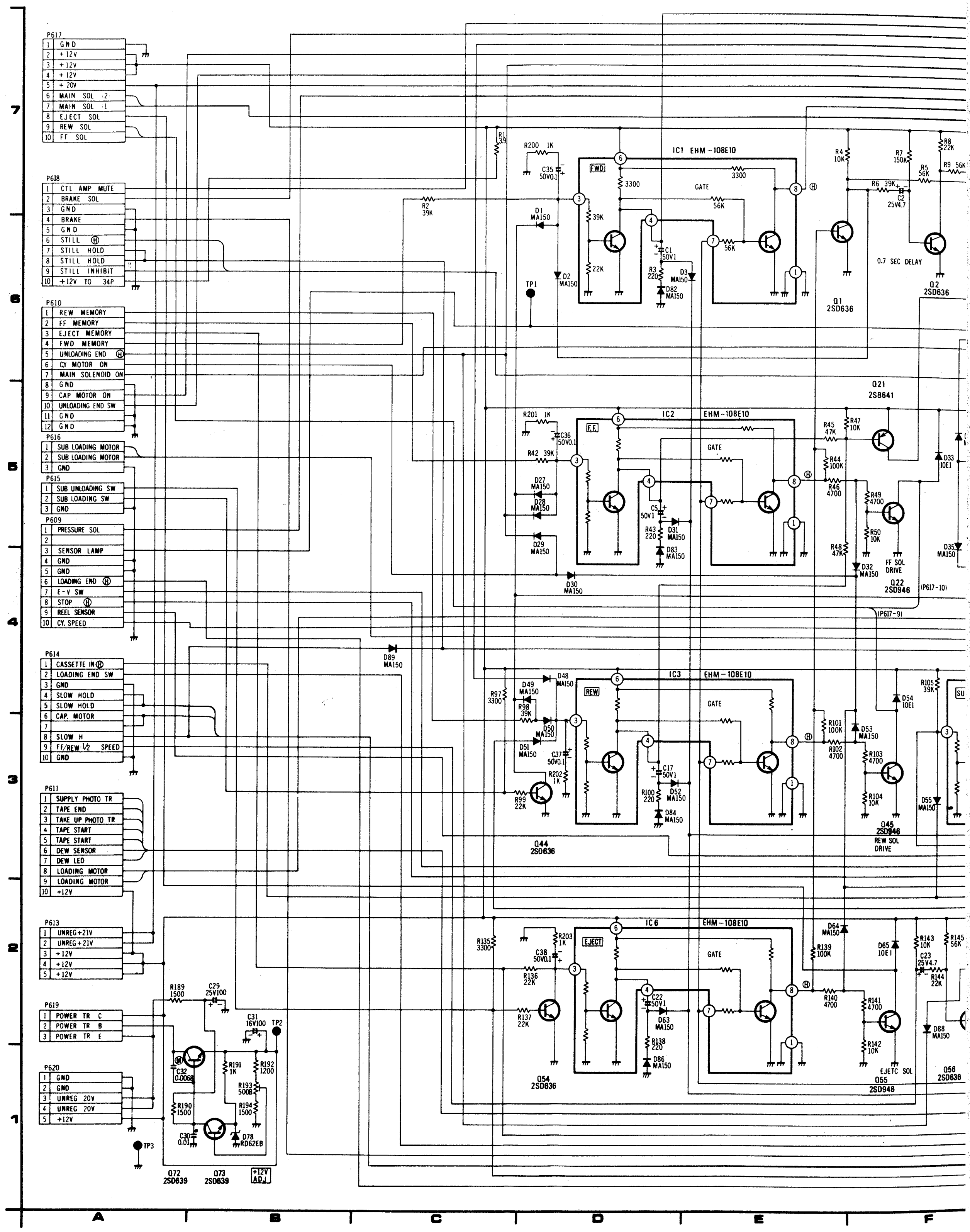
TRANSISTOR REF NO. / MODE	IC1							IC2					
	1	3	4	6	7	8		1	3	4	6	7	8
PLAY	0	5.0	0.1	11.9	0.1	11.0		0	0	11.2	11.9	0.1	0
REC	0	5.0	0.1	11.9	0.1	11.0		0	0	11.2	11.9	0.1	0
FF	0	0	11.2	11.8	0.1	0		0	5.5	0.1	11.8	0.1	7.0
REW	0	0	11.2	11.8	0.1	0		0	0	11.2	11.8	0.1	0

TRANSISTOR REF NO. / MODE	IC3							IC4					
	1	3	4	6	7	8		1	3	4	6	7	8
PLAY	0	0.3	11.2	11.9	0.1	0		0	0	11.2	11.9	0.1	0
REC	0	0.4	11.2	11.9	0.1	0		0	0	11.2	11.9	0.1	0
FF	0	5.2	0.1	11.8	0.1	0		0	0	11.2	11.8	0.1	0
REW	0	5.2	0.1	11.8	0.1	7.2		0	0	11.2	11.8	0.1	0

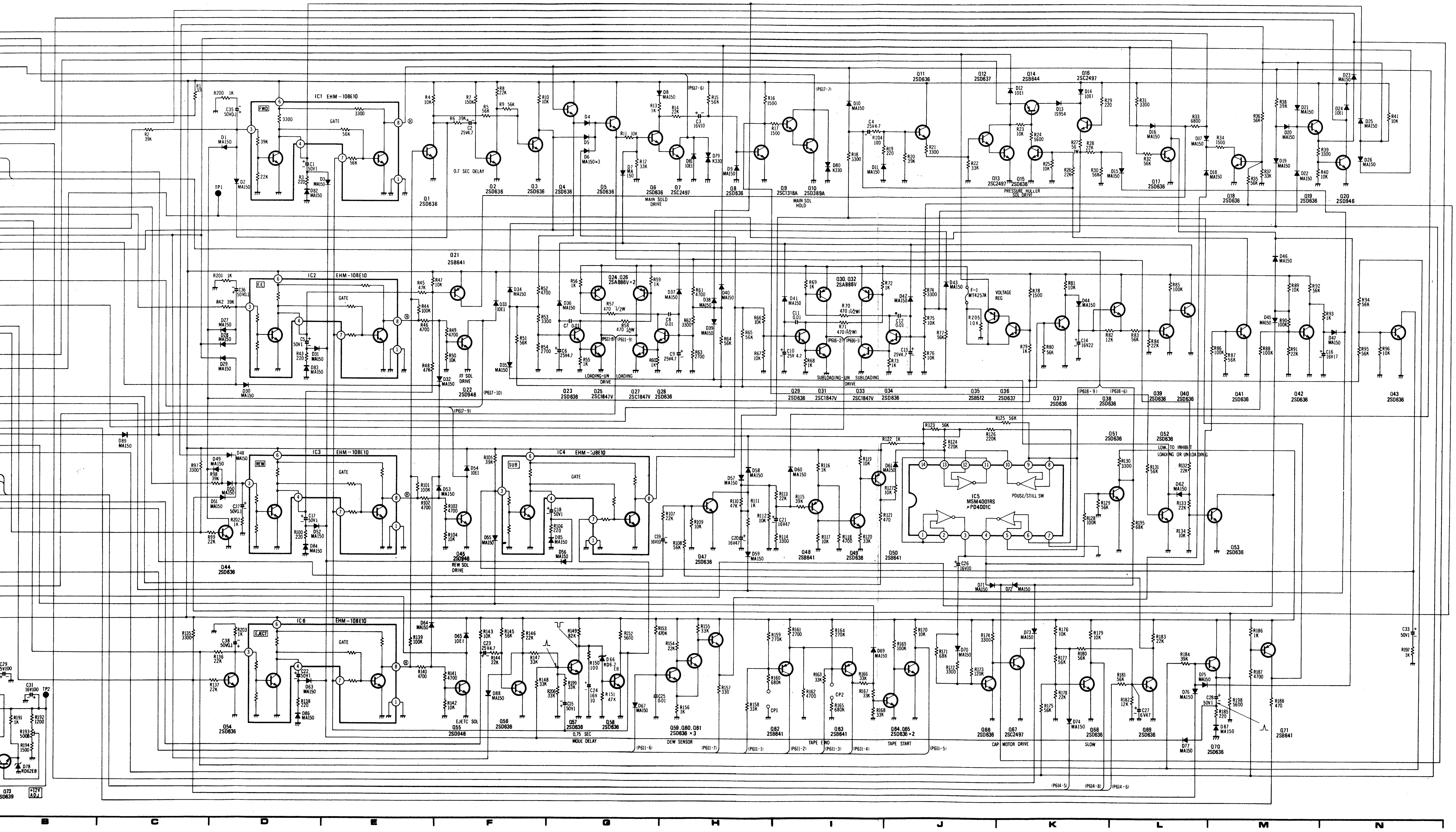
TRANSISTOR REF NO. / MODE	IC5													
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
PLAY	0	0	11.8	0	11.8	11.5	0	11.8	11.8	0	0	0	11.5	11.8
REC	0	0	11.6	0	0.6	11.4	0	0.6	0.6	11.6	0	11.6	11.3	11.6
FF	0	0	11.8	0	11.8	11.5	0	11.8	11.8	0	0	0	11.6	11.8
REW	0	0	11.8	0	11.8	11.5	0	11.8	11.8	0	0	0	11.6	11.8

TRANSISTOR REF NO. / MODE	IC6					
	1	3	4	6	7	8
PLAY	0	0	12.0	0	0.1	0
REC	0	0	11.8	11.8	0.1	0
FF	0	0	11.8	11.8	0.1	0
REW	0	0	11.8	11.8	0.1	0

SYSTEM CONTROL II SCHEMATIC DIAGRAM (Ref. No. #61000)



ONTROL II SCHEMATIC DIAGRAM (Ref. No. #61000)


IC1 EHM-108E10
FWD
GATE
IC2 EHM-108E10
F.F.
IC3 EHM-108E10
REW
IC4 EHM-108E10
SUB
IC6 EHM-108E10
EJECT
IC5 MSM4001RS
μPD4001C
POUSE/STILL SW
LOW: TO INHIBIT LOADING OR UNLOADING
TP1
TP2
Q1 2SD636
Q2 2SD636
0.7 SEC DELAY
Q3 2SD636
Q4 2SD636
Q5 2SD636
Q6 2SD636
Q7 2SC2497
MAIN SOLD DRIVE
Q8 2SD636
Q9 2SC1318A
Q10 2SD389A
MAIN SOL HOLD
Q11 2SD636
Q12 2SD637
Q13 2SC2497
Q14 2SB644
Q15 2SD636
PRESSURE ROLLER SOL DRIVE
Q16 2SC2497
Q17 2SD636
Q18 2SD636
Q19 2SD636
Q20 2SD946
Q21 2SB641
Q22 2SD946
FF SOL DRIVE
Q23 2SD636
Q24, Q26 2SA886V×2
Q25 2SC1847V
LOADING-UN LOADING DRIVE
Q27 2SC1847V
Q28 2SD636
Q29 2SD636
Q30, Q32 2SA886V
Q31 2SC1847V
Q33 2SC1847V
Q34 2SD636
SUBLOADING-UN SUBLOADING DRIVE
Q35 2SB512
Q36 2SD637
VOLTAGE REG
Q37 2SD636
Q38 2SD636
Q39 2SD636
Q40 2SD636
Q41 2SD636
Q42 2SD636
Q43 2SD636
Q44 2SD636
Q45 2SD946
REW SOL DRIVE
Q47 2SD636
Q48 2SB641
Q49 2SD636
Q50 2SB641
Q51 2SD636
Q52 2SD636
Q53 2SD636
Q54 2SD636
Q55 2SD946
EJETC SOL
Q56 2SD636
Q57 2SD636
0.75 SEC MODE DELAY
Q58 2SD636
Q59, Q60, Q61 2SD636×3
DEW SENSOR
Q62 2SB641
Q63 2SB641
TAPE END
Q64, Q65 2SD636×2
TAPE START
Q66 2SD636
Q67 2SC2497
CAP MOTOR DRIVE
Q68 2SD636
SLOW
Q69 2SD636
Q70 2SD636
Q71 2SB641
Q73 2SD639
+12V ADJ
CP1
CP2
B
C
D
E
F
G
H
I
J
K
L
M
N

System Control II	
Q1	D-1
Q2	D-1
Q3	D-1
Q4	E-2
Q5	E-2
Q6	E-1
Q7	E-1
Q8	E-1
Q9	E-1
Q10	E-1
Q11	A-3
Q12	A-3
Q13	A-3
Q14	A-3
Q15	B-3
Q16	B-2
Q17	F-3
Q18	F-3
Q19	E-3
Q20	E-4
Q21	F-3
Q22	F-1
Q23	B-4
Q24	B-3
Q25	B-4
Q26	C-3
Q27	C-4
Q28	C-4
Q29	C-3
Q30	C-3
Q31	C-4
Q32	C-3
Q33	C-4
Q34	C-3
Q35	E-3
Q36	E-3
Q37	B-3
Q38	B-3
Q39	B-4
Q40	B-4
Q41	B-2
Q42	A-1
Q43	C-3
Q44	C-2
Q45	F-1
Q47	B-1
Q48	B-1
Q49	B-1
Q50	B-1
Q51	D-4
Q52	F-1
Q54	D-2
Q55	F-1
Q56	C-1
Q57	C-1
Q58	C-1
Q59	A-3
Q60	A-3
Q61	B-3
Q62	A-4
Q63	A-4
Q64	B-4
Q65	B-4
Q66	D-4
Q67	E-4
Q68	B-1
Q69	B-1
Q70	D-2
Q71	B-2
Q72	F-4
Q73	F-4

SYSTEM CONTROL CIRCUIT TERMINALS

SYSTEM CONTROL II

Note: Low ......Ground.
High......Approx. 12V.

TERMINAL NO.	NAME	OPERATION
P617-6	MAIN SOL (2)	High, when the Play, FF, Rew or Eject button is pressed.
P617-7	MAIN SOL (1)	High, when the Play, FF, Rew or Eject button is pressed.
P617-8	EJECT SOL	High, when the Eject button is pressed.
P617-9	REW SOL	High, when the Rew button is pressed.
P617-10	FF SOL	High, when the FF button is pressed.
P618-1	CTL AMP MUTE	High, when the Play button is pressed.
P618-2	BRAKE SOL	Low, when unloading, subunloading, loading or subloading is performing.
P618-4	BRAKE	Low, when the Pause/Still button is pressed.
P618-6	STILL Ⓗ	High, when the Pause/Still button is pressed.
P618-7	STILL HOLD	Low, when the Pause/Still button is pressed.
P618-8	STILL HOLD	Low, when the Pause/Still button is pressed.
P618-9	STILL INHIBIT	Low, when A.D is performing.
P610-1	REW MEMORY	High, when the Rew button is pressed.
P610-2	FF MEMORY	High, when the FF button is pressed.
P610-3	EJECT MEMORY	High, when the Eject button is pressed.
P610-4	FWD MEMORY	High, when the Play, Slow or X2 button is pressed.
P610-5	LINLOADING END Ⓗ	High when unloading has ended.
P610-6	CY MOTOR ON	High when Rec/Play or Play mode is performing.
P610-7	MAIN SOLENOID ON	High when the Play, FF, Rew or Eject button is pressed.
P610-9	CAP, MOTOR ON	High, when Play, Slow, FF mode is performing.
P610-10	UNLOADING END SW	Low, when unloading has ended.
P616-1	SUB LOADING MOTOR	High when Sub loading is performing.
P616-2	SUB LOADING MOTOR	High when Un Sub loading is performing.
P615-1	SUB UNLOADING SW	Low, when Sub Unloading is performing.
P615-2	SUB LOADING SW	Low, when Sub loading is performing.
P609-1	PINCH ROLLER SOL	Low, when Rec/Play, Play or Pause mode is performing.
P609-3	SENSOR LAMP	Low, when the Sensor Lamp is normal.
P609-6	LOADING END Ⓗ	High, when unloading is completed.
P609-7	E-V SW	High, when E-E mode is performing.
P609-8	STOP Ⓗ	High when the stop button is pressed.
P609-9	REEL SENSOR	High, when the take up Reel is stopped.
P609-10	CY SPEED	High, when the Cylinder is stopped.
P614-1	CASSETTE IN ⊖	Low, when a cassette is inserted.
P614-2	LOADING END SW	High, when loading has ended.
P614-4	SLOW HOLD	Low, when the Slow button is pressed.
P614-5	SLOW HOLD	Low, when the Slow button is pressed.
P614-6	CAP. MOTOR	High, when the Play, X2, Slow or Still advance is active.
P614-8	SLOW H	High, when the SLow button is pressed.
P614-9	FF/REW 1/2 SPEED	High, when the search controller is used, (it becomes frome the NV-A800).
P611-1	SUPPLY PHOTO TR	Low, when the tape end is detected.
P611-2	TAPE END	High, when the tape end is detected.
P611-3	TAKEUP PHOTO TR	Low, when the tape begining is detected.
P611-4	TAPE START	High, when the tape begining is detected.
P611-5	TAPE START	Low, when the tape begining is detected.
P611-6	DEW SENSOR	High, when moisture is detected.
P611-7	DEW LED	High, when moisture is detected.
P611-8	LOADING MOTOR	Low, when the loading action is active.
P611-9	LOADING MOTOR	High, when the loading action is active.
P619-1	POWER TR C	It is connected to the Collector of Power TR.
P619-2	POWER TR B	It is connected to the Base of Power TR.
P619-3	POWER TR E	It is connected to the Emitter of Power TR.

P609 System Control II

PIN NO.	SIGNAL NAME	DESTINATION
1	Pressure Sol.	Pressure Sol. SL605
2	—	—
3	Sensor Lamp	P612-2 (Control Head)
4	GND	—
5	GND	—
6	Loading End Ⓗ	P623-11 (Chrominance Process)
7	E-V SW	P41-4 (Audio)
8	Stop Ⓗ	P606-9 (System Control I)
9	Reel Sensor	P662-1
10	CYL Lock	P25-1 (Servo)

P610 System Control II

PIN NO.	SIGNAL NAME	DESTINATION
1	REW Memory	P607-1 (System Control I)
2	F.F Memory	P607-3 (System Control I)
3	Eject Memory	P607-5 (System Control I)
4	FWD Memory	P606-10 (System Control I)
5	Unloading End (H)	P603-1 (System Control I)
6	CYL Motor ON	P25-10 (Servo)
7	Main Sol. ON	P606-8 (System Control I)
8	GND	—
9	Cap. Motor ON	P603-5 (System Control I)
10	Unloading End SW	P669-2 (Loading Comp SW)
11	GND	—
12	GND	—

P611 System Control II

PIN NO.	SIGNAL NAME	DESTINATION
1	Supply Photo TR	Supply Photo TR (Q602)
2	Tape End	P606-1 (System Control I)
3	Takeup Photo TR	Takeup Photo TR (Q601)
4	Tape Start	P606-2 (System Control I)
5	Tape Start	—
6	DEW Sensor	P668-3 (Loading Motor & DEW Sensor)
7	DEW LED	P607-7 (System Control I)
8	Loading Motor	P668-1 (Loading Motor & DEW Sensor)
9	Loading Motor	P668-2 (Loading Motor & DEW Sensor)
10	+ 12V	P662-3

P613 System Control II

PIN NO.	SIGNAL NAME	DESTINATION
1	Unreg + 12V	Pressure Sol. SL605
2	Unreg + 12V	P10-2 (Power Supply)
3	+ 12V	P83-3 (Chrominance Process)
4	+ 12V	P622-4 (Chrominance Process)
5	+ 12V	Brake Sol. SL606

P614 System Control II

PIN NO.	SIGNAL NAME	DESTINATION
1	Cassette IN Ⓗ	P10-2 (Power Supply)
2	Loading End SW	P669-3 (Loading Comp SW)
3	GND	—
4	Slow Hold	P604-3 (System Control I)
5	Slow Hold	P25-6 (Servo)
6	—	—
7	Cap. Motor	P211-9 (Chrominance Process)
8	Slow Ⓗ	P212-4 (Chro Minance Process)
9	F.F/REW & 1/2 Speed	P22-3 (Servo)
10	GND	—

P615 System Control II

PIN NO.	SIGNAL NAME	DESTINATION
1	SUB Unloading SW	SUB Unloading SW
2	SUB Loading SW	SUB Loading SW
3	GND	—

P616 System Control II (VEP0686A1)

PIN NO.	SIGNAL NAME	DESTINATION
1	SUB Loading Motor	SUB Loading Motor
2	SUB Loading Motor	SUB Loading Motor
3	GND	—

P617 System Control II (VEP0686A1)

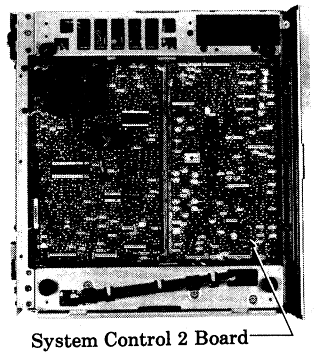
PIN NO.	SIGNAL NAME	DESTINATION
1	—	—
2	+ 12V	SL602 (F.F)
3	+ 12V	SL603 (REW)
4	+ 12V	SL604 (Eject)
5	+ 20V	SL601 (Main)
6	Main Solenoid (2)	SL601 (Main)
7	Main Solenoid (1)	SL601 (Main)
8	Eject Solenoid	SL604 (Eject)
9	REW Solenoid	SL603 (REW)
10	F.F Solenoid	SL602 (F.F)

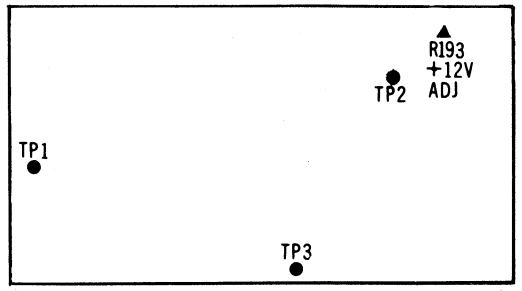
P618 System Control II (VEP0686A1)

PIN NO.	SIGNAL NAME	DESTINATION
1	CTL Amp. Muting	P211-7 (Chrominance Process)
2	Brake Sol.	Brake Sol. SL606
3	GND	—
4	Brake	P211-8 (Chrominance Process)
5	GND	—
6	Still Ⓗ	P212-6 (Chrominance Process)
7	Still Hold	P607-10 (System Control II)
8	Still Hold	P622-3 (Chrominance Process)
9	Still Inhibit	P623-6 (Chrominance Process)
10	+ 12V	—

P619 System Control II (VEP0686A1)

PIN NO.	SIGNAL NAME	DESTINATION
1	Power TR C	Power TR
2	Power TR B	Power TR
3	Power TR E	Power TR


System Control 2 Board

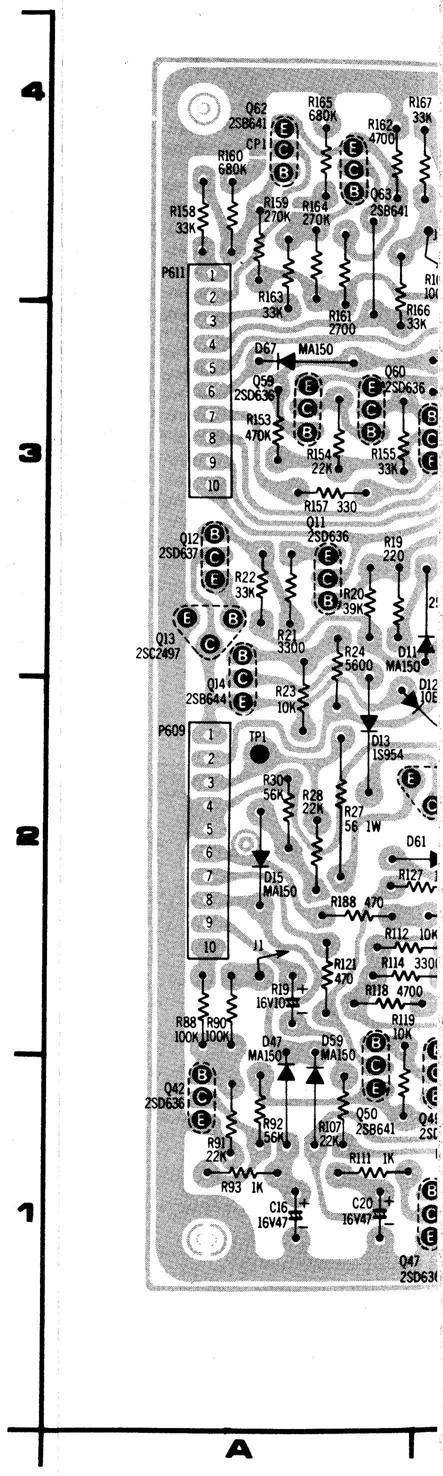


System Control II Connector	
P609	A-2
P610	F-3
P611	A-3
P613	B-2
P614	C-2
P615	C-2
P616	C-2
P617	D-1
P618	E-4
P619	F-4
P620	F-3

System Control II ICs	
IC1	E-2
IC2	F-3
IC3	F-2
IC4	D-2
IC5	D-3
IC6	F-2

P620 System Control II

PIN NO.	SIGNAL NAME	DESTINATI
1	GND	—
2	GND	—
3	Unreg 20V	P11-5 (Power Supply)
4	Unreg 20V	R630
5	+ 12V	R630

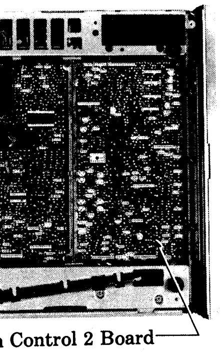


P616 System Control II (VEP0686A1)	
NAME	DESTINATION
Motor	SUB Loading Motor
Motor	SUB Loading Motor
	—

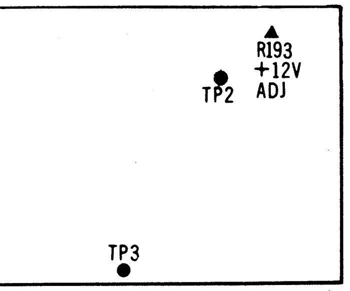
P617 System Control II (VEP0686A1)	
NAME	DESTINATION
	—
	SL602 (F.F)
	SL603 (REW)
	SL604 (Eject)
	SL601 (Main)
(2)	SL601 (Main)
(1)	SL601 (Main)
	SL604 (Eject)
	SL603 (REW)
	SL602 (F.F)

P618 System Control II (VEP0686A1)	
NAME	DESTINATION
ing	P211-7 (Chrominance Process)
	Brake Sol. SL606
	—
	P211-8 (Chrominance Process)
	—
	P212-6 (Chrominance Process)
	P607-10 (System Control II)
	P622-3 (Chrominance Process)
	P623-6 (Chrominance Process)
	—

P619 System Control II (VEP0686A1)	
NAME	DESTINATION
	Power TR
	Power TR
	Power TR



n Control 2 Board


R193
+12V
ADJ
TP2
TP3

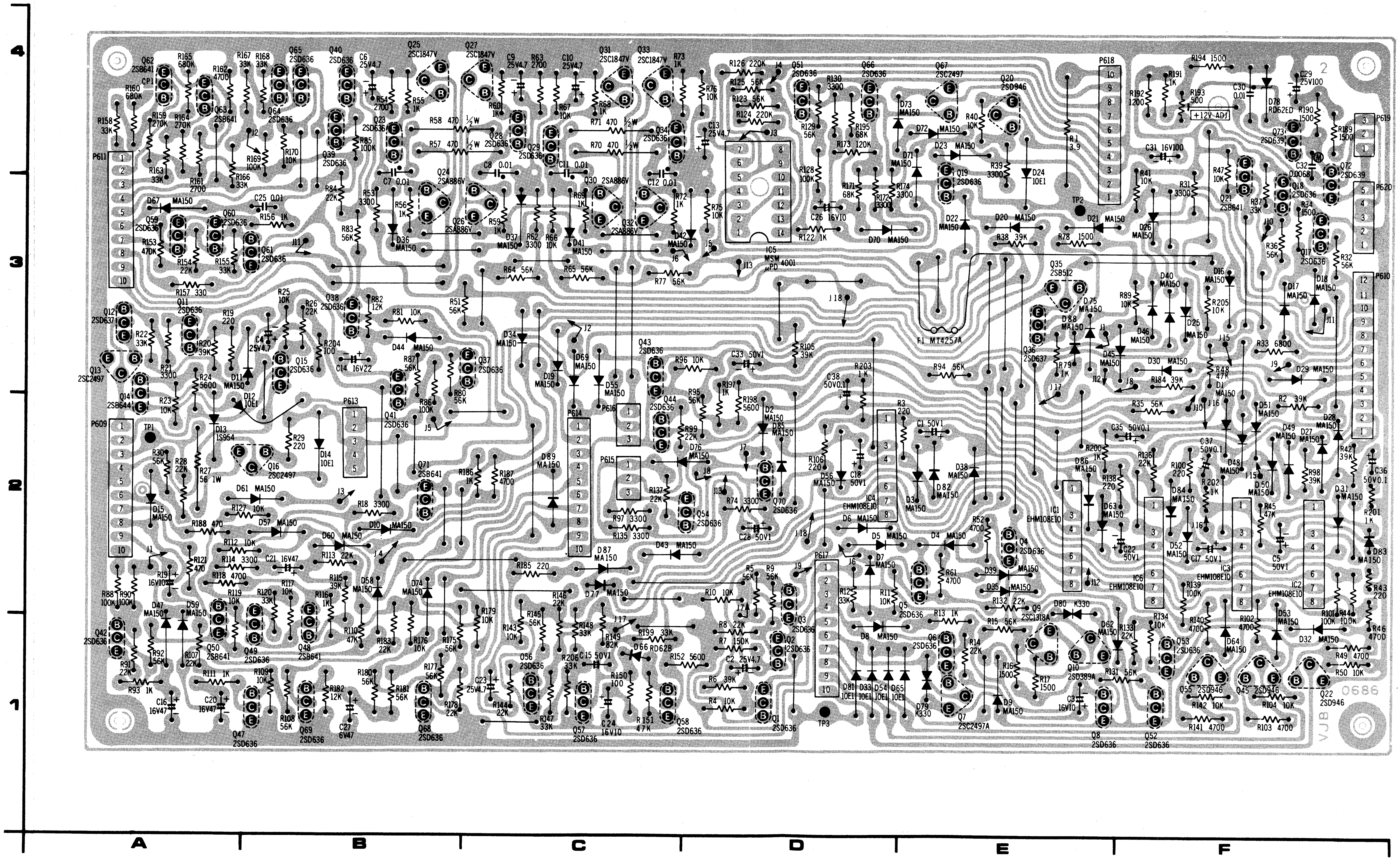
P620 System Control II		
PIN NO.	SIGNAL NAME	DESTINATION
1	GND	—
2	GND	—
3	Unreg 20V	P11-5 (Power Supply)
4	Unreg 20V	R630
5	+12V	R630

System Control II Connector	
P609	A-2
P610	F-3
P611	A-3
P613	B-2
P614	C-2
P615	C-2
P616	C-2
P617	D-1
P618	E-4
P619	F-4
P620	F-3

System Control II ICs	
IC1	E-2
IC2	F-3
IC3	F-2
IC4	D-2
IC5	D-3
IC6	F-2

SYSTEM CONTROL II CIRCUIT BOARD (VEP0686A1)

(99) NV8200


4
3
2
1
A
B
C
D
E
F
P609
P610
P611
P613
P614
P615
P616
P617
P618
P619
P620
IC1 EHM108E10
IC2 EHM108E10
IC3 EHM108E10
IC4 EHM108E10
IC5 MSM4001
IC6 EHM108E10
F1 MT4257A
TP1
TP2
TP3
+12V ADJ
VJB 0686

(100) NV 8200

SYSTEM CONTROL III SCHEMATIC DIAGRAM

SEE PAGE 25 FOR ROAD MAP
OF SUB SERVO CIRCUIT.

SYSTEM CONTROL III DC VOLTAGE CHART

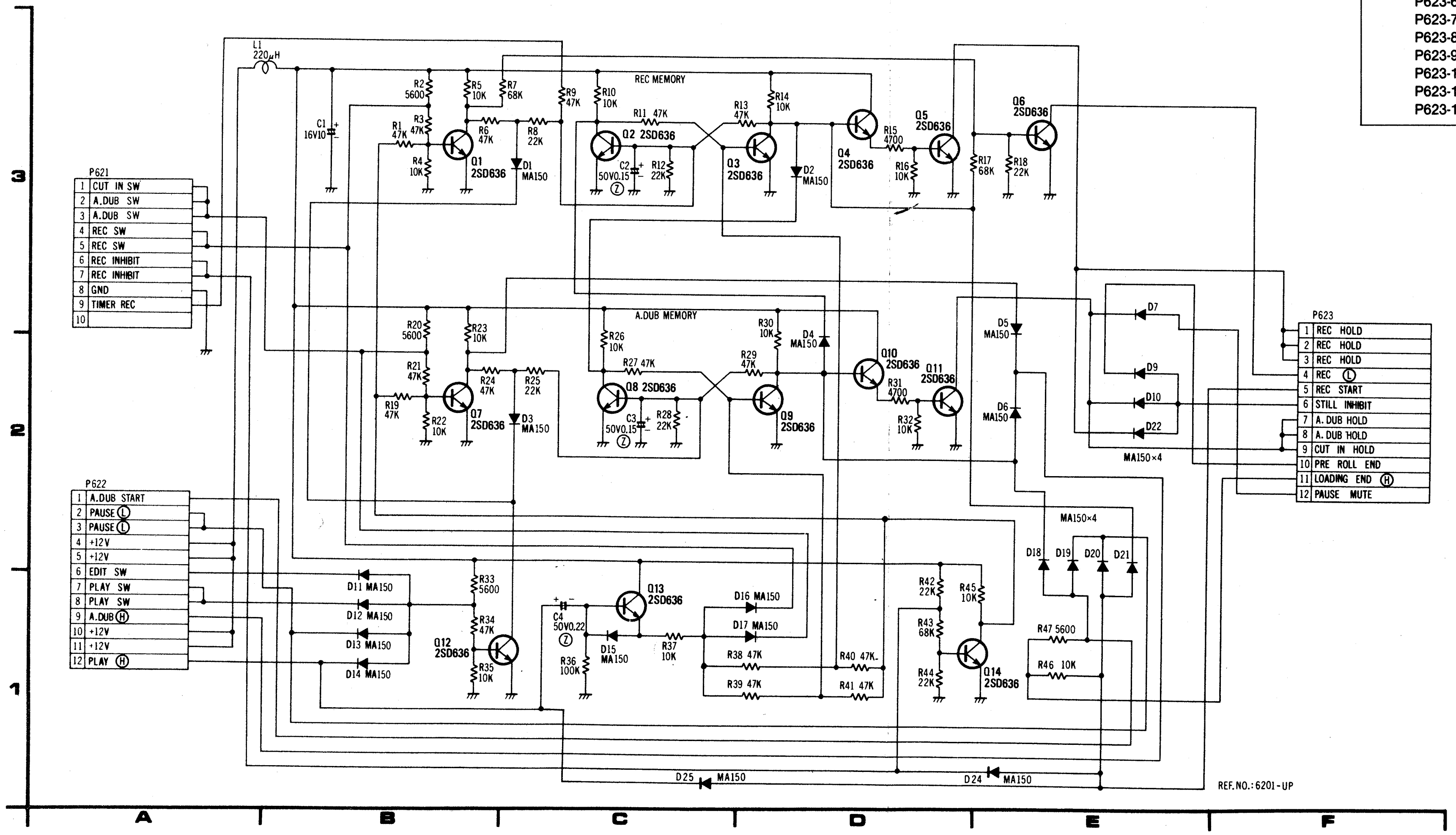
MODE \ TRANSISTOR REF NO.	Q1			Q2			Q3			Q4			Q5			Q6		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.7	0	0	0	10.0	0	0.7	0	0	0	11.8	0	0	11.7	0	0	11.3	0
REC	0.7	0	0	0.7	0	0	0.2	8.8	0	8.8	11.8	8.2	0.8	0	0	0.7	0.1	0
FF	0.7	0	0	0	10.0	0	0.7	0	0	0	11.8	0	0	11.7	0	0	11.3	0
REW	0.7	0	0	0	10.0	0	0.7	0	0	0	11.8	0	0	11.7	0	0	11.3	0

MODE \ TRANSISTOR REF NO.	Q7			Q8			Q9			Q10			Q11			Q12		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0.7	0	0	0	10.0	0	0.7	0	0	0	11.8	0	0	11.5	0	0.6	0	0
REC	0.7	0	0	0	10.0	0	0.7	0	0	0	11.8	0	0	10.3	0	0.6	0	0
FF	0.7	0	0	0	10.0	0	0.7	0	0	0	11.8	0	0	11.5	0	0.1	0	0
REW	0.7	0	0.7	0	10.0	0	0.7	0	0	0	11.8	0	0	11.5	0	0.1	0	0

MODE \ TRANSISTOR REF NO.	Q13			Q14		
	B	C	E	B	C	E
PLAY	0.3	11.8	0.6	0	6.8	0
REC	0.1	11.8	0.4	0.6	0	0
FF	0.3	11.8	0.6	0.3	6.8	0
REW	0.3	11.8	0.6	0.3	6.8	0

P621 System Control III (VEP0850A1)

PIN NO.	SIGNAL NAME	DESTINATION
1	Cut IN SW	
2	AD SW	
3	AD SW	P633-1 (Operation)
4	REC SW	P633-4 (Operation)
5	REC SW	
6	REC Inhibit	P670-3 (REC Inhibit SW)
7	REC Inhibit	P603-4 (System Control I)
8	GND	—
9	Timer REC	P603-2 (System Control I)
10	—	—


L1 220μH
C1 16V10
R1 47K
R2 5600
R3 47K
R4 10K
R5 10K
R6 47K
R7 68K
R8 22K
R9 47K
R10 10K
R11 47K
REC MEMORY
Q1 2SD636
D1 MA150
Q2 2SD636
C2 50V0.15 Ⓩ
R12 22K
Q3 2SD636
R13 47K
R14 10K
D2 MA150
Q4 2SD636
R15 4700
R16 10K
Q5 2SD636
R17 68K
R18 22K
Q6 2SD636
P621
1 CUT IN SW
2 A.DUB SW
3 A.DUB SW
4 REC SW
5 REC SW
6 REC INHIBIT
7 REC INHIBIT
8 GND
9 TIMER REC
10
A.DUB MEMORY
R19 47K
R20 5600
R21 47K
R22 10K
R23 10K
R24 47K
R25 22K
Q7 2SD636
D3 MA150
R26 10K
R27 47K
Q8 2SD636
C3 50V0.15 Ⓩ
R28 22K
R29 47K
R30 10K
Q9 2SD636
D4 MA150
Q10 2SD636
R31 4700
R32 10K
Q11 2SD636
D5 MA150
D6 MA150
D7
D9
D10
D22
MA150×4
P623
1 REC HOLD
2 REC HOLD
3 REC HOLD
4 REC Ⓛ
5 REC START
6 STILL INHIBIT
7 A.DUB HOLD
8 A.DUB HOLD
9 CUT IN HOLD
10 PRE ROLL END
11 LOADING END Ⓗ
12 PAUSE MUTE
P622
1 A.DUB START
2 PAUSE Ⓛ
3 PAUSE Ⓛ
4 +12V
5 +12V
6 EDIT SW
7 PLAY SW
8 PLAY SW
9 A.DUB Ⓗ
10 +12V
11 +12V
12 PLAY Ⓗ
D11 MA150
D12 MA150
D13 MA150
D14 MA150
R33 5600
R34 47K
R35 10K
Q12 2SD636
C4 50V0.22 Ⓩ
R36 100K
D15 MA150
Q13 2SD636
R37 10K
D16 MA150
D17 MA150
R38 47K
R39 47K
R40 47K
R41 47K
R42 22K
R43 68K
R44 22K
R45 10K
Q14 2SD636
MA150×4
D18
D19
D20
D21
R47 5600
R46 10K
D25 MA150
D24 MA150
REF.NO.:6201-UP
3
2
1
A
B
C
D
E
F

SYSTEM CONTROL CIRCUIT TERMINALS

SYSTEM CONTROL III

Note: Low ......Ground.
High......Approx. 12V.

TERMINAL NO.	NAME	OPERATION
P621-1	CUT IN SW	Low, when the Cut in SW of NV-A950 is pressed.
P621-2	A.D. SW	Low, when the A.D SW of NV-A950 is pressed.
P621-3	A.D. SW	Low, when the A.D. SW of NV-8200 is pressed.
P621-4	REC SW	Low, when the Rec SW of NV-8200 is pressed.
P621-5	REC SW	Low, when the Rec SW of NV-A950 is pressed.
P621-6	REC INHIBIT	Low, when a cassette is used without Rec tab.
P621-7	REC INHIBIT	Low, when a cassette is used without Rec tab.
P621-9	TIMER REC	High, when the Timer Rec SW is in the Rec mode.
P622-1	A.D. START	High, when the A.D. SW is pressed.
P622-1	PAUSE Ⓛ	Low, when the Pause SW of NV-A950 is pressed.
P622-3	PAUSE Ⓛ	Low, when the Pause SW of NV-8200 is pressed.
P622-6	EDIT SW	Low, when the EDIT SW of NV-A950 is pressed.
P622-7	PLAY SW	Low, when the Play SW of NV-A950 is pressed.
P622-8	PLAY SW	Low, when the Play SW of NV-8200 is pressed.
P622-12	PLAY Ⓗ	High, when the Play SW of NV-8200 is pressed.
P623-1	REC HOLD	Low, when the Rec SW is pressed.
P623-2	REC HOLD	Low, when the Rec SW is pressed.
P623-3	REC HOLD	Low, when the Rec SW is pressed.
P624-4	REC Ⓛ	Low, when the Rec SW is pressed.
P624-5	REC START	High, when the Rec mode starts.
P623-6	STILL INHIBIT	Low, when the A.D. SW is pressed.
P623-7	A.D. HOLD	Low, when the A.D. SW is pressed.
P623-8	A.D. HOLD	Low, when the A.D. SW is pressed.
P623-9	CUT IN HOLD	Low, when the A.D. SW is pressed.
P623-10	PRE. ROLL END	Low, when the Pre Roll action has ended.
P623-11	LOADING END Ⓗ	High, when the Loading is ended.
P623-12	PAUSE MUTE	Low, when the A.D. SW is pressed.

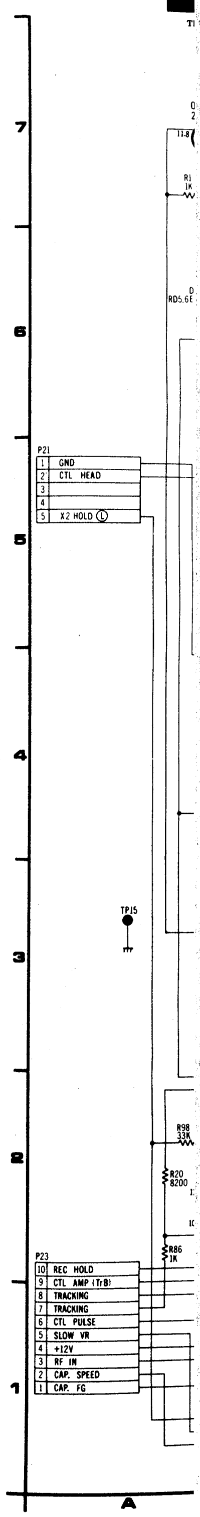
P622 System Control III

PIN NO.	SIGNAL NAME	DESTINATION
1	AD Start	P41-6 (Audio)
2	Pause Ⓛ	
3	Pause Ⓛ	P618 (System Control II)
4	+12V	P613-4 (System Control II)
5	+12V	P606-4 (System Control II)
6	Edit SW	
7	Play SW	
8	Play SW	P604-9 (System Control I)
9	AD Ⓗ	P41-10 (Audio)
10	+12V	P32-3 (Luminance Process)
11	+12V	P25-2 (Servo)
12	Play Ⓗ	P607-4 (System Control I)

P623 System Control III

PIN NO.	SIGNAL NAME	DESTINATION
1	REC Hold	P23-10 (Servo
2	REC Hold	
3	REC Hold	P633-3 (Operation)
4	REC Ⓛ	P32-10 (Luminance Process)
5	REC Start	P41-7 (Audio)
6	Still Inhibit	P618 (System Control II)
7	AD Hold	P633-2 (Operation)
8	AD Hold	
9	Cut IN Hold	
10	Pre. Roll End	
11	Loading End Ⓗ	P609-6 (System Control II)
12	Pause Mute	P22-7 (Audio)

SERV


7
6
5
4
3
2
1
A
P21
1 GND
2 CTL HEAD
3
4
5 X2 HOLD Ⓛ
TP15
P23
10 REC HOLD
9 CTL AMP (Tr8)
8 TRACKING
7 TRACKING
6 CTL PULSE
5 SLOW VR
4 +12V
3 RF IN
2 CAP. SPEED
1 CAP. FG

NTROL CIRCUIT TERMINALS

YSTEM CONTROL III

Note: Low ......Ground.
High......Approx. 12V.

ME	OPERATION
	Low, when the Cut in SW of NV-A950 is pressed.
	Low, when the A.D SW of NV-A950 is pressed.
	Low, when the A.D. SW of NV-8200 is pressed.
	Low, when the Rec SW of NV-8200 is pressed.
	Low, when the Rec SW of NV-A950 is pressed.
	Low, when a cassette is used without Rec tab.
	Low, when a cassette is used without Rec tab.
	High, when the Timer Rec SW is in the Rec mode.
	High, when the A.D. SW is pressed.
	Low, when the Pause SW of NV-A950 is pressed.
	Low, when the Pause SW of NV-8200 is pressed.
	Low, when the EDIT SW of NV-A950 is pressed.
	Low, when the Play SW of NV-A950 is pressed.
	Low, when the Play SW of NV-8200 is pressed.
	High, when the Play SW of NV-8200 is pressed.
	Low, when the Rec SW is pressed.
	Low, when the Rec SW is pressed.
	Low, when the Rec SW is pressed.
	Low, when the Rec SW is pressed.
	High, when the Rec mode starts.
T	Low, when the A.D. SW is pressed.
	Low, when the A.D. SW is pressed.
	Low, when the A.D. SW is pressed.
)	Low, when the A.D. SW is pressed.
ND	Low, when the Pre Roll action has ended.
D Ⓗ	High, when the Loading is ended.
E	Low, when the A.D. SW is pressed.

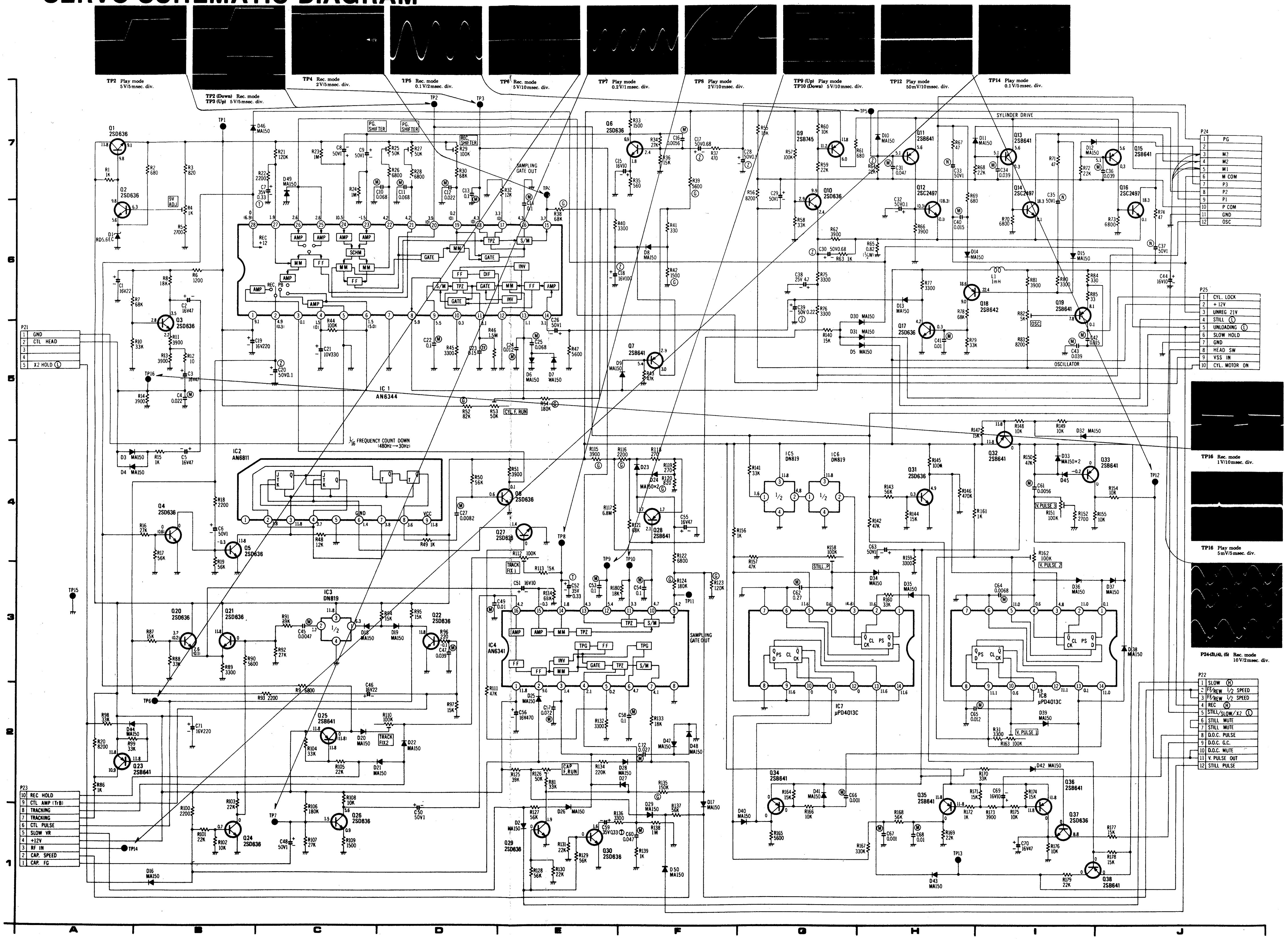
P622 System Control III

NAME	DESTINATION
	P41-6 (Audio)
	P618 (System Control II)
	P613-4 (System Control II)
	P606-4 (System Control II)
	P604-9 (System Control I)
	P41-10 (Audio)
	P32-3 (Luminance Process)
	P25-2 (Servo)
	P607-4 (System Control I)

P623 System Control III

NAME	DESTINATION
	P23-10 (Servo
	P633-3 (Operation)
	P32-10 (Luminance Process)
	P41-7 (Audio)
	P618 (System Control II)
	P633-2 (Operation)
Ⓗ	P609-6 (System Control II)
	P22-7 (Audio)

SERVO SCHEMATIC DIAGRAM


TP2 Play mode 5V/5msec. div.
TP2 (Down) Rec. mode
TP3 (Up) 5V/5msec. div.
TP4 Rec. mode 2V/5msec. div.
TP5 Rec. mode 0.1V/2msec. div.
TP6 Rec. mode 5V/10msec. div.
TP7 Play mode 0.2V/1msec. div.
TP8 Play mode 2V/10msec. div.
TP9 (Up) Play mode
TP10 (Down) 5V/10msec. div.
TP12 Play mode 50mV/10msec. div.
TP14 Play mode 0.1V/5msec. div.
TP16 Rec. mode 1V/10msec. div.
TP16 Play mode 5mV/5msec. div.
P24-(3),(4), (5) Rec. mode 10V/2msec. div.
IC 1 AN6344
IC2 AN6811
IC3 DN819
IC4 AN6341
IC5 DN819
IC6 DN819
IC7 μPD4013C
IC8 μPD4013C
SAMPLING GATE OUT
SYLINDER DRIVE
OSCILLATOR
1/16 FREQUENCY COUNT DOWN (480Hz→30Hz)
P21
1 GND
2 CTL HEAD
3
4
5 X2 HOLD Ⓛ
P23
10 REC HOLD
9 CTL AMP (TrB)
8 TRACKING
7 TRACKING
6 CTL PULSE
5 SLOW VR
4 +12V
3 RF IN
2 CAP. SPEED
1 CAP. FG
P24
1 PG
2
3 M3
4 M2
5 M1
6 M COM
7 P3
8 P2
9 P1
10 P COM
11 GND
12 OSC
P25
1 CYL. LOCK
2 +12V
3 UNREG 21V
4 STILL Ⓛ
5 UNLOADING Ⓛ
6 SLOW HOLD
7 GND
8 HEAD SW
9 VSS IN
10 CYL. MOTOR ON
P22
1 SLOW Ⓗ
2 FF/REW 1/2 SPEED
3 FF/REW 1/2 SPEED
4 REC Ⓗ
5 STILL/SLOW/X2 Ⓛ
6 STILL MUTE
7 STILL MUTE
8 D.O.C. PULSE
9 D.O.C. G.C.
10 D.O.C. MUTE
11 V. PULSE OUT
12 STILL PULSE
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7

SERVO CIRCUIT BOARD (VEP0293D1)

P21 Servo		
PIN NO.	SIGNAL NAME	DESTINATION
1	GND	—
2	CTL Head	P612-5 (Control Head)
3	—	—
4	—	—
5	X2 Hold Ⓛ	P49-6 (Audio)

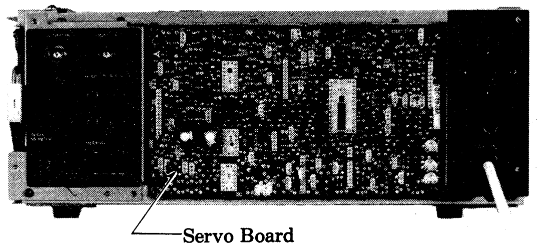
P22 Servo		
PIN NO.	SIGNAL NAME	DESTINATION
1	Slow Ⓗ	P212-5 (Chrominance Process)
2	F.F/REW 1/2 Speed	—
3	F.F/REW 1/2 Speed	P614-9 (System Control II)
4	REC Ⓗ	P32-6 (Luminance Process)
5	Still/Slow X2 Ⓛ	P607-5 (System Control I)
6	Still Mute	—
7	Still Mute	P623-12 (Chrominance Process)
8	D.O.C Pulse	P81-3 (Chrominance Process)
9	D.O.C G.C	P34-2 (Luminance Process)
10	D.O.C Mute	P211-5 (Chrominance Process)
11	V. Pulse OUT	P34-7 (Luminance Process)
12	Still Pulse	P212-1 (Chrominance Process)

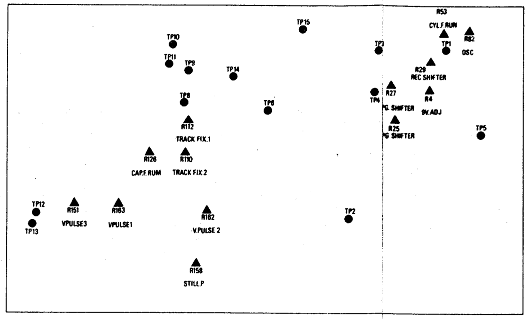
P23 Servo		
PIN NO.	SIGNAL NAME	DESTINATION
1	Cap. FG	P605-1 (Capstan Motor)
2	Cap. Speed	P212-11 (Chrominance Process)
3	RF IN	P34-3 (Luminance Process)
4	—	—
5	Slow VR	P654-2 (Tracking, Slow VR)
6	CTL Pulse	—
7	Tracking	P654-4 (Tracking, Slow VR)
8	Tracking	—
9	CTL Amp. (TR B)	P211-6 (Chrominance Process)
10	REC Hold	P623-1 (Chrominance Process)

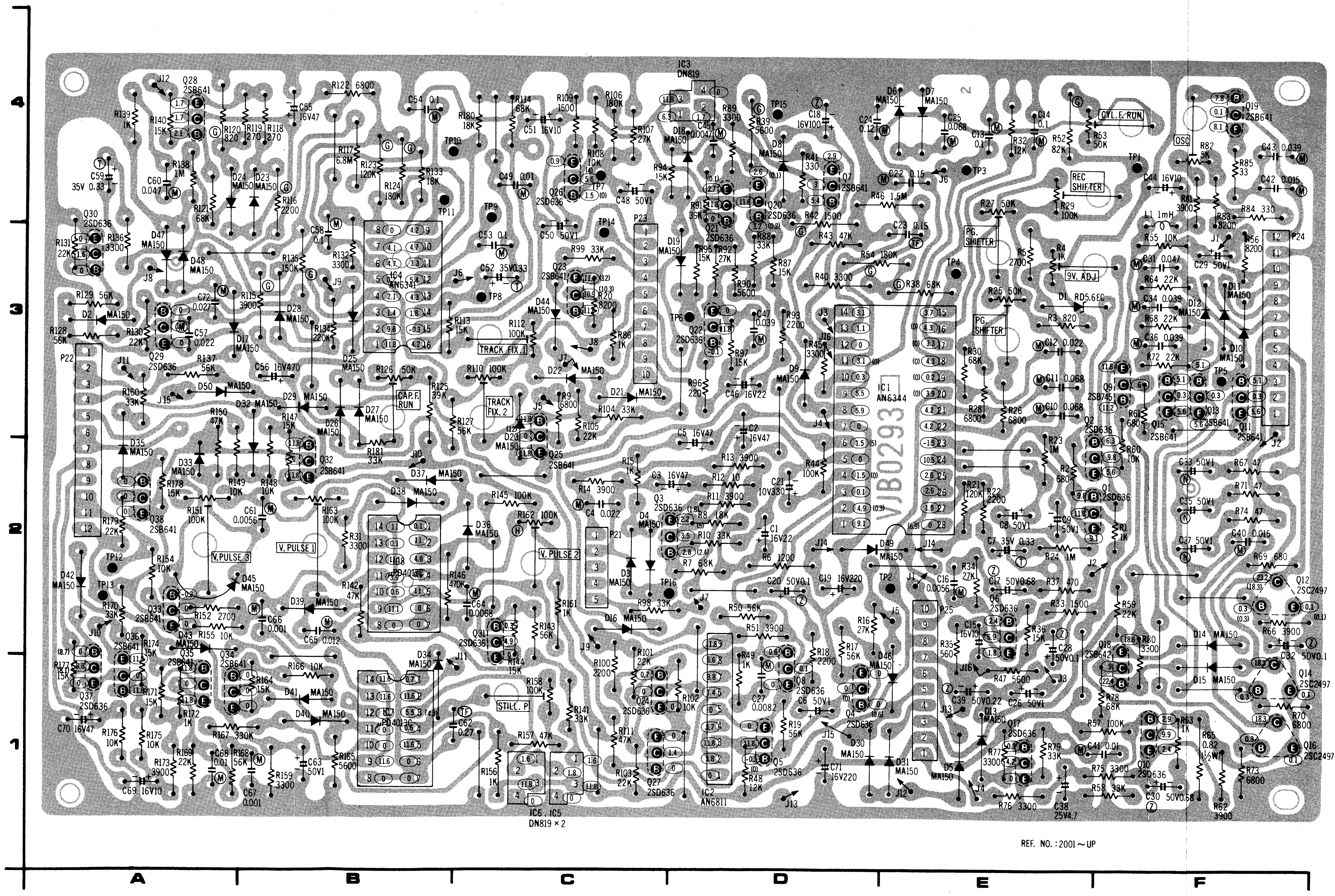
P24 Servo		
PIN NO.	SIGNAL NAME	DESTINATION
1	PG	H603 (PG Head)
2	—	—
3	M3	Cylinder Motor
4	M2	Cylinder Motor
5	M1	Cylinder Motor
6	M COM	Cylinder Motor
7	P3	Cylinder Motor
8	P2	Cylinder Motor
9	P1	Cylinder Motor
10	P COM	Cylinder Motor
11	GND	Cylinder Motor
12	OSC	Cylinder Motor

P25 Servo		
PIN NO.	SIGNAL NAME	DESTINATION
1	CYL Lock	P609-10 (System Control II)
2	+12V	P613-3 (System Control II)
3	Unreg +21V	P211-12 (Chrominance Process)
4	Still Ⓛ	P212-9 (Chrominance Process)
5	Unloading Ⓛ	P669-1 (Loading Comp SW)
6	Slow Hold	P614-5 (System Control II)
7	GND	—
8	PG OUT	P34-4 (Luminance Process)
9	VSS IN	P211-3 (Chrominance Process)
10	CYL Motor ON	P610-6 (System Control II)

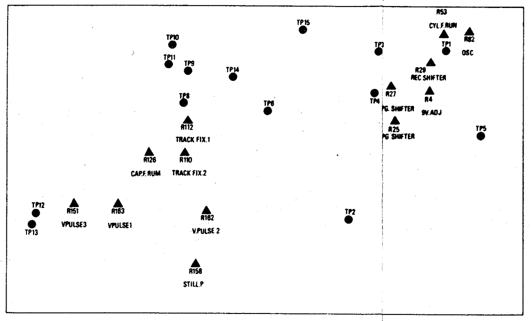
Servo	
Q1	E-2
Q2	E-3
Q3	C-2
Q4	D-2
Q5	D-1
Q6	E-2
Q7	D-4
Q8	D-2
Q9	E-3
Q10	F-1
Q11	F-3
Q12	F-2
Q13	F-3
Q14	F-2
Q15	F-3
Q16	F-1
Q17	E-1
Q18	F-1
Q19	F-4
Q20	D-4
Q21	D-4
Q22	D-3
Q23	C-3
Q24	C-1
Q25	C-3
Q26	C-3
Q27	C-1
Q28	A-4
Q29	A-3
Q30	A-3
Q31	C-2
Q32	C-2
Q33	A-2
Q34	A-1
Q35	A-1
Q36	A-1
Q37	A-1
Q38	A-2


Servo Board


R53
CYL.F.RUN
R82
OSC
TP15
TP10
TP11
TP9
TP14
TP3
TP1
R29
REC SHIFTER
TP4
R27
PG. SHIFTER
R4
9V.ADJ
R25
PG SHIFTER
TP5
TP8
TP6
R112
TRACK FIX.1
R126
CAP.F.RUM
R110
TRACK FIX.2
TP12
TP13
R151
VPULSE3
R163
VPULSE1
R162
V.PULSE 2
TP2
R158
STILL.P


4
3
2
1
A
B
C
D
E
F
IC1
AN6344
IC2
AN6811
IC3
DN819
IC5, IC5
DN819 × 2
VJB0293
P21
P22
P23
P24
P25
V.PULSE 1
V.PULSE 2
V.PULSE 3
TRACK FIX.1
TRACK FIX.2
CAP.F RUN
CYL.F. RUN
REC SHIFTER
PG. SHIFTER
PG SHIFTER
9V. ADJ
STILL. P
OSC

REF. NO. : 2001 ~ UP


TP10
TP11
TP9
TP14
TP15
TP8
TP4
TP3
TP1
TP5
TP2
TP12
TP13
R53
CYL F RUN
OSC
R29
REC SHIFTER
R27
PG SHIFTER
R4
9V ADJ
R25
PG SHIFTER
R112
TRACK FIX 1
R110
TRACK FIX 2
R108
CAPS RUN
R151
VPULSE3
R83
VPULSE1
R152
VPULSE 2
R154
STILL P

SUB SERVO SCHEMATIC DIAGRAM

SEE PAGE 25 FOR ROAD MAP
OF SUB SERVO CIRCUIT.

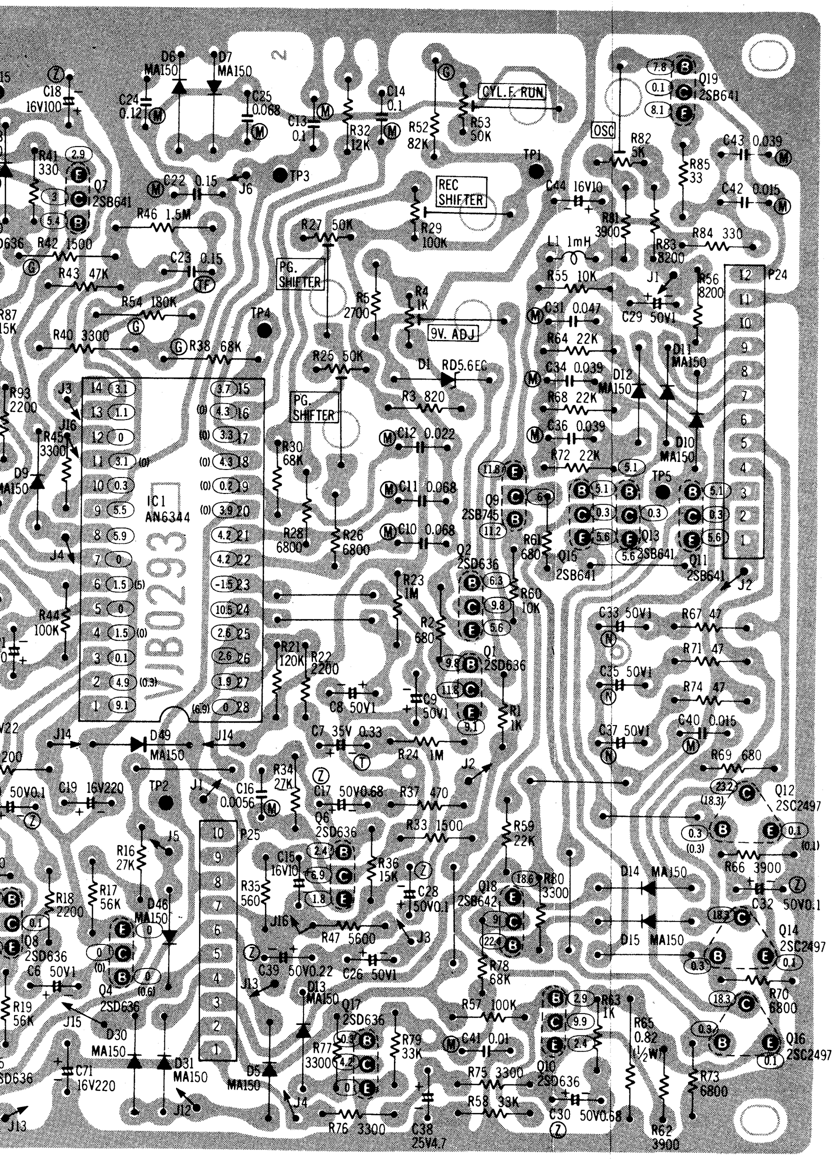
(101)
NV-8200

SUB SERVO DC VOLTAGE CHART

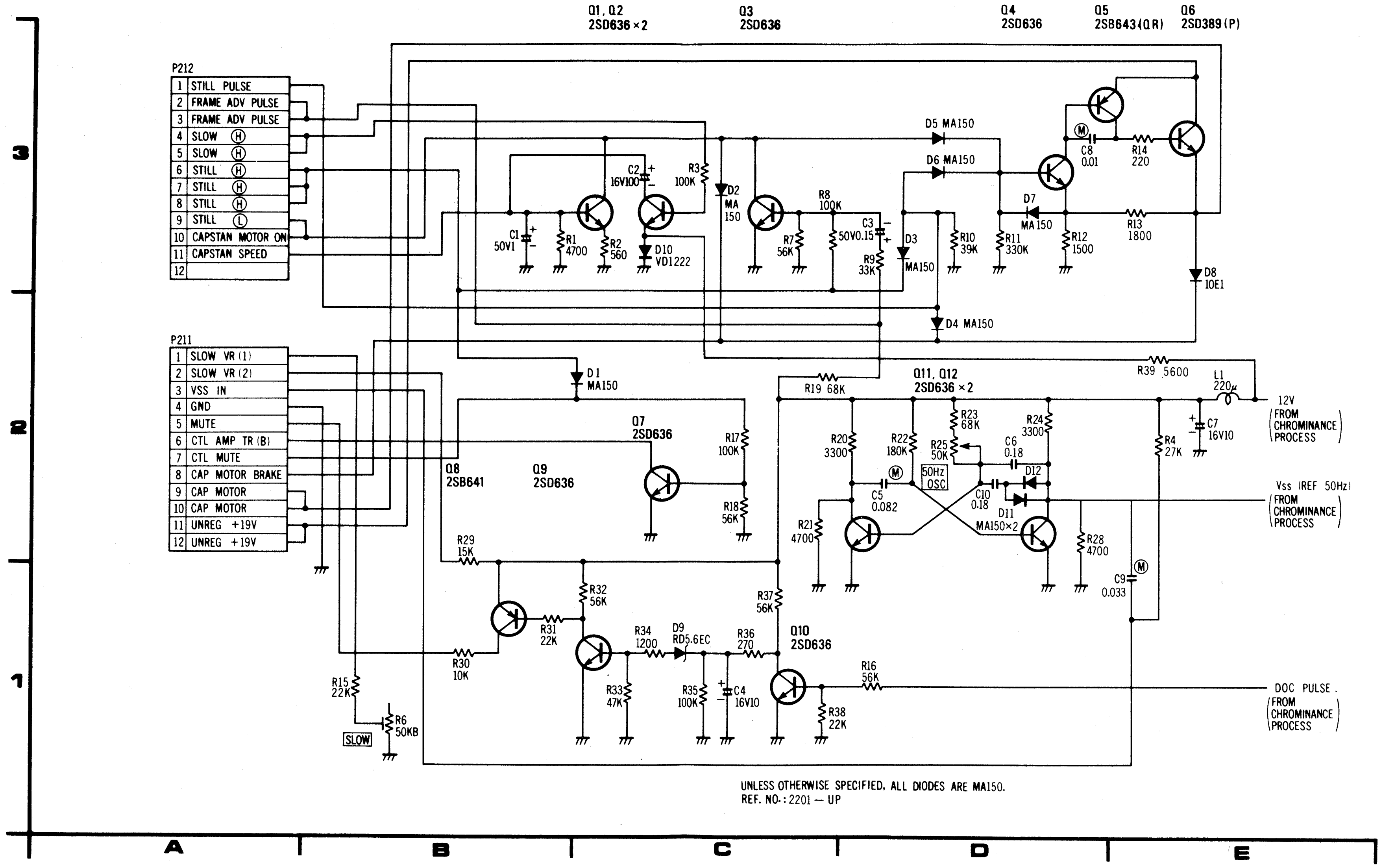
MODE \ TRANSISTOR REF NO.	Q1			Q2			Q3			Q4			Q5			Q6		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	1.0	3.3	0.4	0	1.2	1.3	0	3.4	0	3.0	18.0	2.6	18.0	6.3	18.5	6.3	18.5	5.6
REC	1.0	3.3	0.4	0	1.2	1.3	0	3.4	0	3.0	18.1	2.6	18.1	6.3	18.7	6.3	18.7	5.6
FF	1.3	3.0	0.7	0	1.5	1.3	0	3.3	0	2.9	18.4	2.6	18.3	6.6	19.0	6.3	19.0	5.6
REW	1.3	3.0	0.7	0	1.5	1.3	0	3.3	0	3.0	18.4	2.6	18.1	6.6	18.7	6.4	19.0	5.8
MODE \ TRANSISTOR REF NO.	Q7			Q8			Q9			Q10			Q11			Q12		
	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E	B	C	E
PLAY	0	−0.1	0	11.7	0	11.7	0	11.7	0	0.6	0	0	−1.4	4.6	0	−0.4	1.8	0
REC	0	−0.1	0	11.7	0	11.8	0	11.7	0	0.6	0	0	−1.4	4.6	0	−0.4	1.8	0
FF	−0.3	−0.2	0	11.0	11.7	11.7	0.6	0.1	0	0	6.3	0	−1.4	4.6	0	−0.4	1.8	0
REW	−0.1	0	0	11.0	11.7	11.7	0.6	0.1	0	0	6.3	0	−1.4	4.6	0	−0.4	1.8	0

P211 SUB Servo (VEP0850A1)		
PIN NO.	SIGNAL NAME	DESTINATION
1	Slow VR (1)	P654-3 (Tracking Slow)
2	Slow VR (2)	P654-1 (Tracking Slow)
3	VSS IN	P25-9 (Servo)
4	GND	—
5	Mute	P22-10 (Servo)
6	CTL Amp. TR (B)	P23-9 (Servo)
7	CTL Mute	P618-1 (System Control II)
8	Cap. Motor Brake	P618-4 (System Control II)
9	Cap. Motor	P614-6 (System Control II)
10	Cap. Motor	P605-4 (Capstan Motor
11	Unreg +21V	P25-3 (Servo)
12	Unreg +21V	P10-1 (Power Supply)

P212 SUB Servo (VEP0850A1)		
PIN NO.	SIGNAL NAME	DESTINATION
1	Still Pulse	P22-12 (Servo)
2	Frame ADV Pulse	
3	Frame ADV Pulse	P633-5 (Operation)
4	Slow Ⓗ	P614-8 (System Control II)
5	Slow Ⓗ	P22-1 (Servo)
6	Still Ⓗ	P618-6 (System Control II)
7	Still Ⓗ	—
8	Still Ⓗ	P41-8 (Audio)
9	Still Ⓛ	P25-4 (Servo)
10	Cap. Motor ON	P610-9 (System Control II)
11	Cap. Speed	P23-2 (Servo)
12		

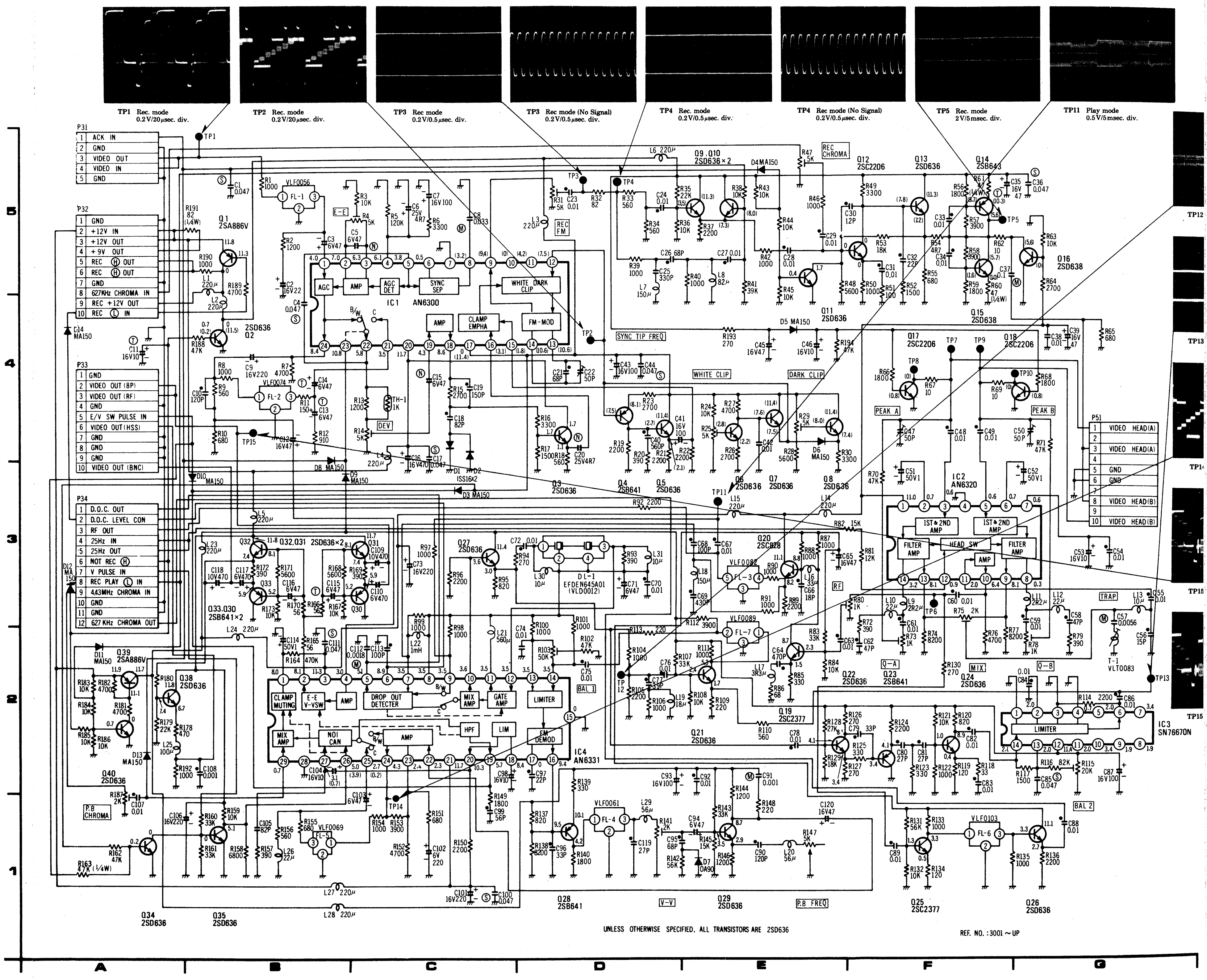

VJB0293
IC1
AN6344
CYL. F. RUN
REC SHIFTER
PG. SHIFTER
PG. SHIFTER
9V. ADJ
OSC
TP1
TP2
TP3
TP4
TP5
P24
D
E
F

REF. NO. : 2001～UP


Q1, Q2
2SD636×2
Q3
2SD636
Q4
2SD636
Q5
2SB643(QR)
Q6
2SD389(P)
P212
1 STILL PULSE
2 FRAME ADV PULSE
3 FRAME ADV PULSE
4 SLOW Ⓗ
5 SLOW Ⓗ
6 STILL Ⓗ
7 STILL Ⓗ
8 STILL Ⓗ
9 STILL Ⓛ
10 CAPSTAN MOTOR ON
11 CAPSTAN SPEED
12
P211
1 SLOW VR (1)
2 SLOW VR (2)
3 VSS IN
4 GND
5 MUTE
6 CTL AMP TR (B)
7 CTL MUTE
8 CAP MOTOR BRAKE
9 CAP MOTOR
10 CAP MOTOR
11 UNREG +19V
12 UNREG +19V
C1 50V1
R1 4700
C2 16V100
R2 560
D10 VD1222
R3 100K
D2 MA150
R7 56K
R8 100K
C3 50V0.15
R9 33K
D3 MA150
D4 MA150
D5 MA150
D6 MA150
D7 MA150
R10 39K
R11 330K
R12 1500
C8 0.01
R14 220
R13 1800
D8 10E1
D1 MA150
R19 68K
Q11, Q12
2SD636×2
R39 5600
L1 220μ
12V (FROM CHROMINANCE PROCESS)
C7 16V10
R4 27K
Q7 2SD636
R17 100K
R18 56K
Q8 2SB641
Q9 2SD636
R20 3300
R22 180K
R23 68K
R25 50K
C6 0.18
R24 3300
C5 0.082
50Hz OSC
C10 0.18
D12
D11 MA150×2
R21 4700
R28 4700
C9 0.033
Vss (REF 50Hz) (FROM CHROMINANCE PROCESS)
R29 15K
R32 56K
R31 22K
R30 10K
R34 1200
D9 RD5.6EC
R36 270
R37 56K
Q10 2SD636
R33 47K
R35 100K
C4 16V10
R16 56K
R38 22K
DOC PULSE (FROM CHROMINANCE PROCESS)
R15 22K
R6 50KB
SLOW
3
2
1
A
B
C
D
E

UNLESS OTHERWISE SPECIFIED, ALL DIODES ARE MA150.
REF. NO.: 2201 — UP

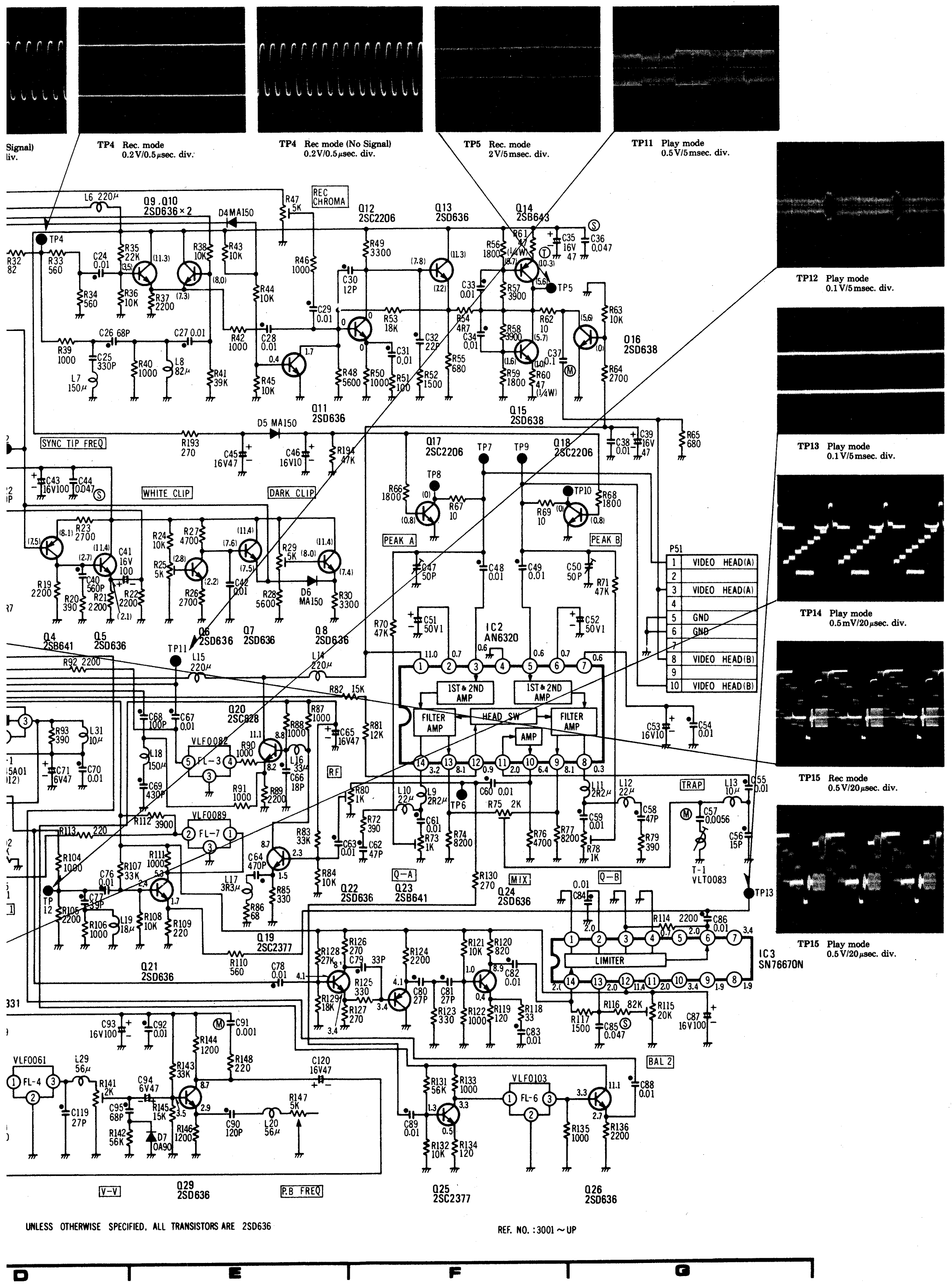
LUMINANCE PROCESS SCHEMATIC DIAGRAM


TP1 Rec. mode 0.2V/20µsec. div.
TP2 Rec. mode 0.2V/20µsec. div.
TP3 Rec mode 0.2V/0.5µsec. div.
TP3 Rec mode (No Signal) 0.2V/0.5µsec. div.
TP4 Rec. mode 0.2V/0.5µsec. div.
TP4 Rec mode (No Signal) 0.2V/0.5µsec. div.
TP5 Rec. mode 2V/5msec. div.
TP11 Play mode 0.5V/5msec. div.
P31
ACK IN
GND
VIDEO OUT
VIDEO IN
GND
P32
GND
+12V IN
+12V OUT
+9V OUT
REC (H) OUT
REC (H) OUT
GND
627KHz CHROMA IN
REC +12V OUT
REC (L) IN
P33
GND
VIDEO OUT (8P)
VIDEO OUT (RF)
GND
E/V SW PULSE IN
VIDEO OUT (HSS)
GND
GND
GND
VIDEO OUT (BNC)
P34
D.O.C. OUT
D.O.C. LEVEL CON
RF OUT
25Hz IN
25Hz OUT
NOT REC (H)
V PULSE IN
REC PLAY (L) IN
4.43MHz CHROMA IN
GND
GND
627 KHz CHROMA OUT
P51
VIDEO HEAD(A)
VIDEO HEAD(A)
GND
GND
VIDEO HEAD(B)
VIDEO HEAD(B)
IC1 AN6300
AGC
AMP
AGC DET
SYNC SEP
WHITE DARK CLIP
AMP
CLAMP EMPHA
FM-MOD
IC2 AN6320
1ST & 2ND AMP
FILTER AMP
HEAD SW
IC3 SN76670N
LIMITER
IC4 AN6331
CLAMP MUTING
E-E V-VSW
AMP
DROP OUT DETECTER
MIX AMP
GATE AMP
LIMITER
HPF
LIM
FM DEMOD
NOI CAN
DL-1 EFDEN645A01 (VLD0012)
Q1 2SA886V
Q2 2SD636
Q3 2SD636
Q4 2SB641
Q5 2SD636
Q6 2SD636
Q7 2SD636
Q8 2SD636
Q9.Q10 2SD636×2
Q11 2SD636
Q12 2SC2206
Q13 2SD636
Q14 2SB643
Q15 2SD638
Q16 2SD638
Q17 2SC2206
Q18 2SC2206
Q19 2SC2377
Q20 2SC828
Q21 2SD636
Q22 2SD636
Q23 2SB641
Q24 2SD636
Q25 2SC2377
Q26 2SD636
Q27 2SD636
Q28 2SB641
Q29 2SD636
Q32.Q31 2SD636×2
Q33.Q30 2SB641×2
Q34 2SD636
Q35 2SD636
Q38 2SD636
Q39 2SA886V
Q40 2SD636
REC CHROMA
REC FM
E-E
DEV
SYNC TIP FREQ
WHITE CLIP
DARK CLIP
PEAK A
PEAK B
RF
TRAP
Q-A
Q-B
MIX
BAL 1
BAL 2
V-V
P.B FREQ
P.B CHROMA
T-1 VLT0083
A
B
C
D
E
F
G
1
2
3
4
5

UNLESS OTHERWISE SPECIFIED, ALL TRANSISTORS ARE 2SD636

REF. NO. : 3001 ~ UP

AM


Signal)
liv.
TP4 Rec. mode
0.2V/0.5μsec. div.
TP4 Rec mode (No Signal)
0.2V/0.5μsec. div.
TP5 Rec. mode
2V/5msec. div.
TP11 Play mode
0.5V/5msec. div.
TP12 Play mode
0.1V/5msec. div.
TP13 Play mode
0.1V/5msec. div.
TP14 Play mode
0.5mV/20μsec. div.
TP15 Rec mode
0.5V/20μsec. div.
TP15 Play mode
0.5V/20μsec. div.
REC CHROMA
Q9, Q10 2SD636×2
Q12 2SC2206
Q13 2SD636
Q14 2SB643
Q11 2SD636
Q15 2SD638
Q16 2SD638
Q17 2SC2206
Q18 2SC2206
SYNC TIP FREQ
WHITE CLIP
DARK CLIP
PEAK A
PEAK B
IC2 AN6320
1ST & 2ND AMP
FILTER AMP
HEAD SW
AMP
P51
VIDEO HEAD(A)
GND
VIDEO HEAD(B)
Q4 2SB641
Q5 2SD636
Q6 2SD636
Q7 2SD636
Q8 2SD638
Q20 2SC828
RF
TRAP
Q22 2SD636
Q23 2SB641
Q24 2SD636
Q-A
Q-B
MIX
IC3 SN76670N
LIMITER
Q19 2SC2377
Q21 2SD636
BAL 2
V-V
PB FREQ
Q29 2SD636
Q25 2SC2377
Q26 2SD636
D
E
F
G

UNLESS OTHERWISE SPECIFIED, ALL TRANSISTORS ARE 2SD636

REF. NO. :3001 ~ UP

Luminance Process	
Q1	B-1
Q2	B-1
Q3	D-1
Q4	E-1
Q5	D-1
Q6	C-1
Q7	C-1
Q8	C-1
Q9	F-2
Q10	F-2
Q11	F-1
Q12	F-1
Q13	F-2
Q14	G-2
Q15	G-1
Q16	F-3
Q17	F-4
Q18	F-3
Q19	E-4
Q20	E-4
Q21	C-2
Q22	B-3
Q23	B-3
Q24	B-2
Q25	E-4
Q26	D-4
Q27	D-3
Q28	C-3
Q29	B-3
Q30	A-1
Q31	A-1
Q32	A-3
Q33	A-3
Q34	A-3
Q35	A-3
Q38	B-2
Q39	A-4
Q40	B-4
IC1	E-1
IC2	F-4
IC3	C-2
IC4	D-3

P31 Luminance Process

PIN NO.	SIGNAL NAME	DESTINATION
1	ACK IN	P82-1 (Chrominance Process)
2	GND	—
3	Video OUT	P82-5 (Chrominance Process)
4	Video IN	P674-5 (Audio Input & Video Output)
5	GND	—

P32 Luminance Process

PIN NO.	SIGNAL NAME	DESTINATION
1	GND	—
2	+12V	P81-7 (Chrominance Process)
3	+12V	P662-10 (Chrominance Process)
4	+9V	P661-6 (RF Converter)
5	REC Ⓗ	P41-5 (Audio)
6	REC Ⓗ	P22-4 (Servo)
7	GND	—
8	627kHz Chroma IN	P82-7 (Chrominance Process)
9	REC +12V	P81-5 (Chrominance Process)
10	REC Ⓛ	P623-4 (Chrominance Process)

P33 Luminance Process

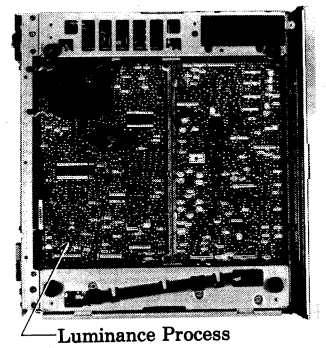
PIN NO.	SIGNAL NAME	DESTINATION
1	GND	—
2	Video OUT	P674-2 (Audio Input & Video Output)
3	Video OUT	P661-8 (RF Converter)
4	GND	—
5	E/V SW Pulse	P41-3 (Audio)
6	Video OUT	P81-10 (Chrominance Process)
7	GND	—
8	GND	—
9	GND	—
10	Video OUT	P673-10 (Audio Input & Video Output)

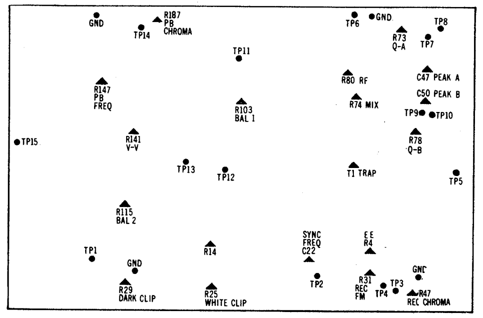
P34 Luminance Process

PIN NO.	SIGNAL NAME	DESTINATION
1	D.O.C OUT	P81-2 (Chrominance Process)
2	D.O.C Level Cont.	P22-9 (Servo)
3	RF OUT	P23-3 (Servo)
4	25Hz IN	P25-8 (Servo)
5	25Hz OUT	P81-1 (Chrominance Process)
6	Not REC Ⓗ IN	P81-6 (Chrominance Process)
7	V. Pulse IN	P22-17 (Servo)
8	REC Play Ⓛ	P47-2 (Audio)
9	4.43MHz Chroma IN	P82-3 (Chrominance Process)
10	GND	—
11	GND	—
12	627kHz Chroma OUT	P82-10 (Chrominance Process)

P51 Luminance Process

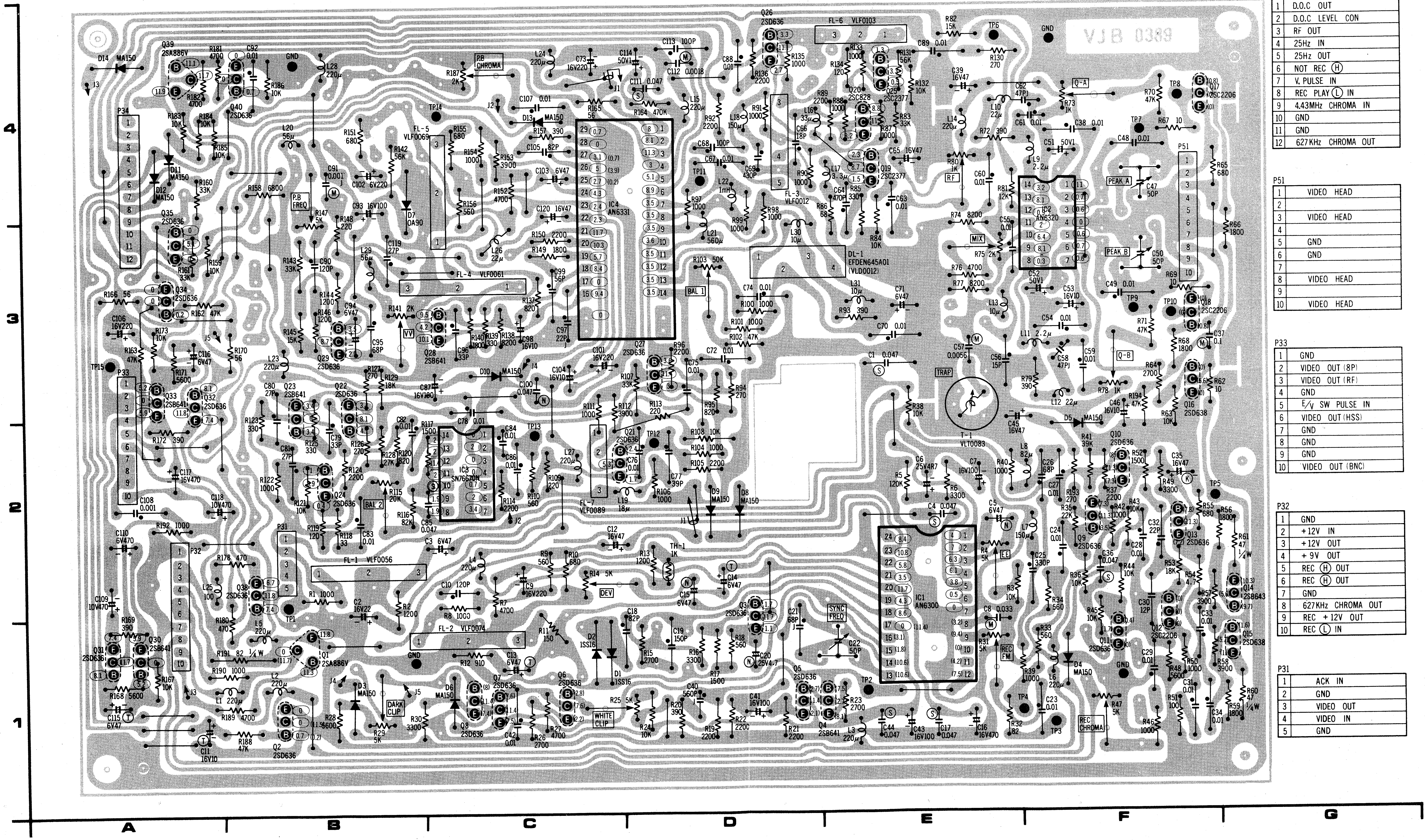
PIN NO.	SIGNAL NAME	DESTINATION
1	Video Head (R)	H601 (Video Head)
2	—	—
3	Video Head (W)	H601 (Video Head)
4	—	—
5	GND	—
6	GND	—
7	—	—
8	Video Head (W)	H602 (Video Head)
9	—	—
10	Video Head (R)	H602 (Video Head)


Luminance Process


GND
TP14
R187 PB CHROMA
TP6
GND
TP8
R73 Q-A
TP7
TP11
R80 RF
C47 PEAK A
R147 PB FREQ
R103 BAL 1
R74 MIX
C50 PEAK B
TP9
TP10
TP15
R141 V-V
R78 Q-B
TP13
TP12
T1 TRAP
TP5
R115 BAL 2
SYNC FREQ C22
EE R4
TP1
R14
GND
TP2
R31 REC FM
TP4
TP3
GND
R47 REC CHROMA
R29 DARK CLIP
R25 WHITE CLIP

(103) NV8200

LUMINANCE PROCESS CIRCUIT BOARD (VEP0389A1)


VJB 0389
4
3
2
1
A
B
C
D
E
F
G
IC1 AN6300
IC2 AN6320
IC3 SN76670N
IC4 AN6331
DL-1 EFDEN645A01 (VLD0012)
T-1 VLT0083
FL-1 VLF0056
FL-2 VLF0074
FL-3 VLF0012
FL-4 VLF0061
FL-5 VLF0069
FL-6 VLF0103
FL-7 VLF0089
P.B CHROMA
P.B FREQ
BAL 1
BAL 2
DARK CLIP
WHITE CLIP
SYNC FREQ
DEV
MIX
TRAP
PEAK A
PEAK B
Q-A
Q-B
RF
EE
REC FM
REC CHROMA
VV
GND
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
P31
P32
P33
P34
P51

P34

1	D.O.C OUT
2	D.O.C LEVEL CON
3	RF OUT
4	25Hz IN
5	25Hz OUT
6	NOT REC Ⓗ
7	V. PULSE IN
8	REC PLAY Ⓛ IN
9	4.43MHz CHROMA IN
10	GND
11	GND
12	627KHz CHROMA OUT

P51

1	VIDEO HEAD
2	
3	VIDEO HEAD
4	
5	GND
6	GND
7	
8	VIDEO HEAD
9	
10	VIDEO HEAD

P33

1	GND
2	VIDEO OUT (8P)
3	VIDEO OUT (RF)
4	GND
5	E/V SW PULSE IN
6	VIDEO OUT (HSS)
7	GND
8	GND
9	GND
10	VIDEO OUT (BNC)

P32

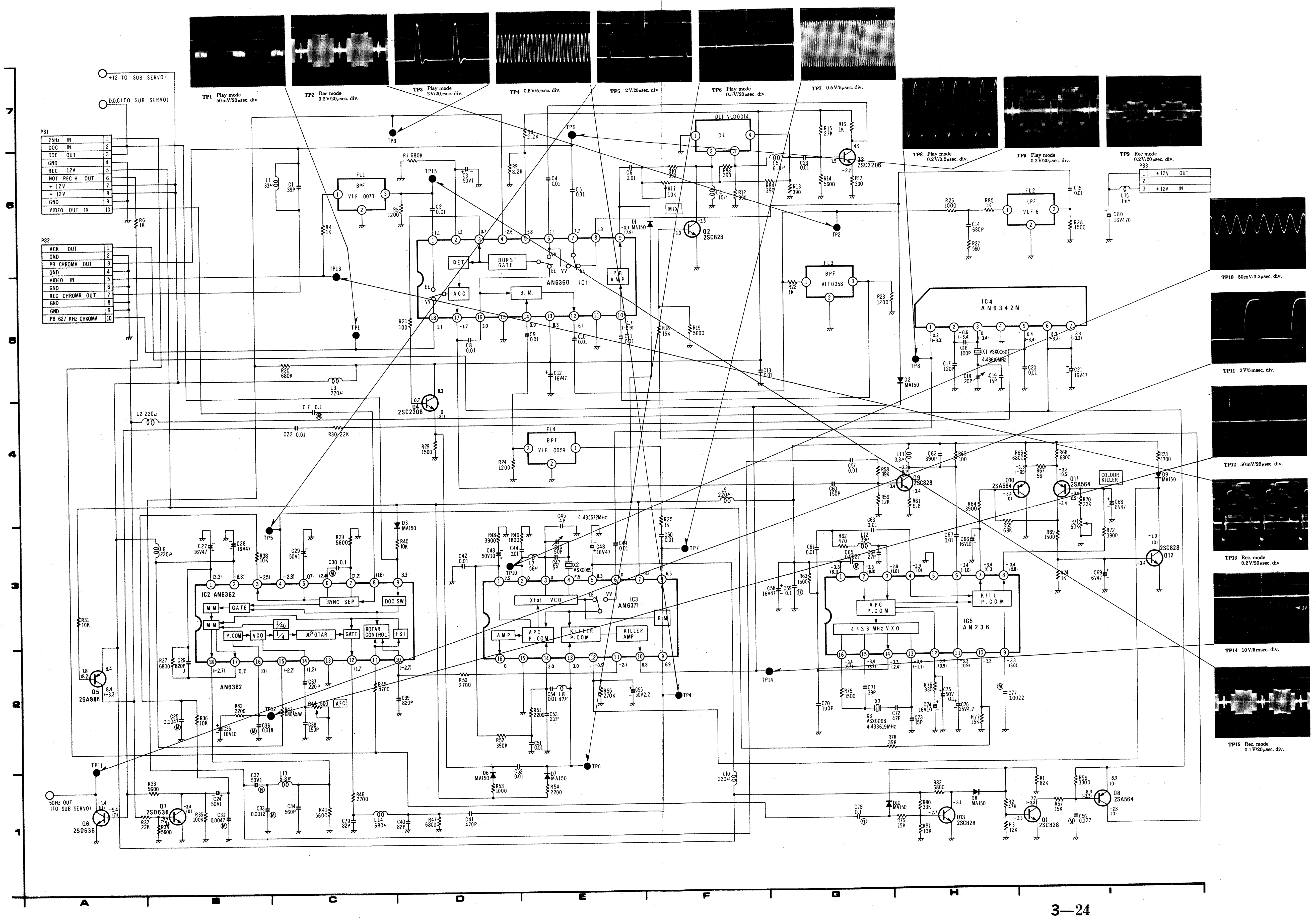
1	GND
2	+12V IN
3	+12V OUT
4	+ 9V OUT
5	REC Ⓗ OUT
6	REC Ⓗ OUT
7	GND
8	627KHz CHROMA OUT
9	REC +12V OUT
10	REC Ⓛ IN

P31

1	ACK IN
2	GND
3	VIDEO OUT
4	VIDEO IN
5	GND

(104) NV8200

CHROMINANCE PROCESS SCHEMATIC DIAGRAM


TP1 Play mode 50mV/20µsec. div.

TP2 Rec mode 0.2V/20µsec. div.

TP3 Play mode 2V/20µsec. div

TP4 0.5V/5µsec. div.

TP5 2V/20µsec. div.

TP6 Play mode 0.5V/20µsec. div.

TP7 0.5V/5µsec. div.

TP8 Play mode 0.2V/0.2µsec. div.

TP9 Play mode 0.2V/20µsec. div.

TP9 Rec mode 0.2V/20µsec. div.

TP10 50mV/0.2µsec. div.

TP11 2V/5msec. div.

TP12 50mV/20µsec. div.

TP13 Rec. mode 0.2V/20µsec. div.

TP14 10V/5msec. div.

TP15 Rec. mode 0.1V/20µsec. div.

+12 (TO SUB SERVO)
D.O.C (TO SUB SERVO)
P81
1 25Hz IN
2 DOC IN
3 DOC OUT
4 GND
5 REC 12V
6 NOT REC H OUT
7 + 12V
8 + 12V
9 GND
10 VIDEO OUT IN
P82
1 ACK OUT
2 GND
3 PB CHROMA OUT
4 GND
5 VIDEO IN
6 GND
7 REC CHROMR OUT
8 GND
9 GND
10 PB 627 KHz CHKOMA
P83
1 +12V OUT
2
3 +12V IN
FL1 BPF VLF 0073
FL2 LPF VLF 6
FL3 BPF VLF0058
FL4 BPF VLF 0059
DL1 VLD0014
DL
MIX
AN6360 IC1
DET
BURST GATE
ACC
B.M.
P.B AMP
IC2 AN6362
GATE
SYNC SEP
DOC SW
MM
P.COM
VCO
1/40
1/4
90° OTAR
ROTAR CONTROL
FSI
AFC
IC3 AN6371
Xtal VCO
AMP
APC P.COM
KILLER P.COM
KILLER AMP
B.M
IC4 AN6342N
IC5 AN236
APC P.COM
4433 MHz VXO
KILL P.COM
COLOUR KILLER
X1 VSX0066 4.43619MHz
X2 VSX0069
X3 VSX0068 4.433619MHz
4.435572MHz
Q1 2SC828
Q2 2SC828
Q3 2SC2206
Q4 2SC2206
Q5 2SA886
Q6 2SD636
Q7 2SD636
Q8 2SA564
Q9 2SC828
Q10 2SA564
Q11 2SA564
Q12 2SC828
Q13 2SC828
50Hz OUT (TO SUB SERVO)
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
7
6
5
4
3
2
1
A
B
C
D
E
F
G
H
I

CHROMINANCE PROCESS & SYSTEM CONTROL III & SUB SERVO CIRCUIT

P81 Chrominance Process

PIN NO.	SIGNAL NAME	DESTINATION
1	25Hz IN |	P34-12 (Luminance Process)
2	D.O.C. IN	P34-1 (Luminance Process)
3	D.O.C. OUT	P22-8 (Servo)
4	GND	—
5	REC +12V	P32-9 (Luminance Process)
6	Not REC Ⓗ|OUT	P34-6 (Luminance Process)
7	+12V	P32-2 (Luminance Process)
8	+12V	P650-1 (Lamp & Meter)
9	GND	—
10	Video OUT IN	P33-6

P82 Chrominance Process

PIN NO.	SIGNAL NAME	DESTINATION
1	ACK OUT	P31-1 (Luminance Process)
2	GND	—
3	4.43MHz OUT |	P34-9 (Luminance Process)
4	GND	—
5	Video IN	P31-3 (Luminance Process)
6	GND	—
7	627kHz Chroma OUT |	P32-8 (Luminance Process)
8	GND	—
9	GND	—
10	627kHz Chroma IN |	P34-12 (Luminance Process)

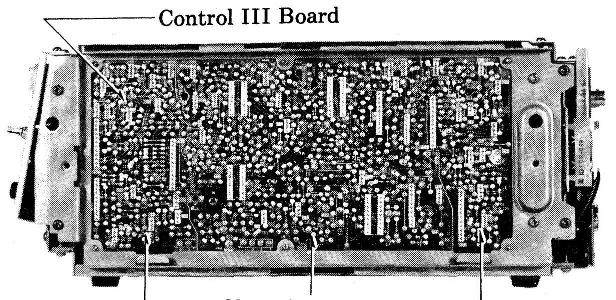
P83 Chrominance Process

PIN NO.	SIGNAL NAME	DESTINATION
1	+12V	P41-1 (Audio)
2	—	—
3	+12V	P613-3 (System Control II)

Chrominance Process	
Q1	D-3
Q2	D-1
Q4	E-2
Q5	E-3
Q6	E-3
Q7	E-3
Q8	C-1
Q9	B-2
Q10	C-3
Q11	B-3
Q12	B-3
Q13	D-3
IC1	E-1
IC2	E-3
IC3	C-2
IC4	F-3
IC5	C-3

System Control III	
Q1	A-1
Q2	A-3
Q3	A-3
Q4	A-3
Q5	A-3
Q6	A-3
Q7	B-1
Q8	B-3
Q9	B-3
Q10	B-3
Q11	A-3
Q12	B-1
Q13	A-2
Q14	B-1

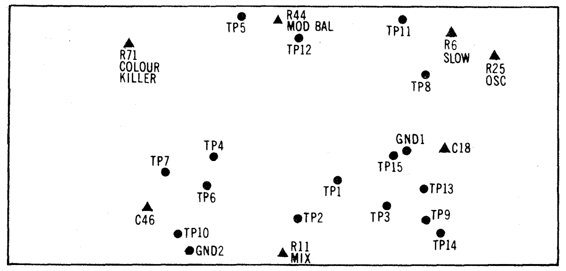
Chrominance Process/Sub Servo/System Control III Board



Chrominance Area

System Control 3 Area

Sub-Servo Area


TP5
R44
MOD BAL
TP11
R71
COLOUR
KILLER
TP12
R6
SLOW
R25
OSC
TP8
GND1
C18
TP4
TP7
TP15
TP6
TP1
TP13
C46
TP2
TP3
TP9
TP10
GND2
R11
MIX
TP14

Sub Servo	
Q1	G-1
Q2	G-1
Q3	G-2
Q4	G-2
Q5	G-2
Q6	G-2
Q7	G-2
Q8	F-3
Q9	G-3
Q10	G-3
Q11	G-3
Q12	G-3

P621

1	CUT IN SW
2	A.D. SW
3	A.D. SW
4	REC SW
5	REC SW
6	REC INHIBIT
7	REC INHIBIT
8	GND
9	TIMER REC
10	

P622

1	A.D. START
2	PAUSE Ⓛ
3	PAUSE Ⓛ
4	+12V
5	+12V
6	EDIT SW
7	PLAY SW
8	PLAY SW
9	A.D. Ⓗ
10	+12V
11	+12V
12	PLAY Ⓗ

P623

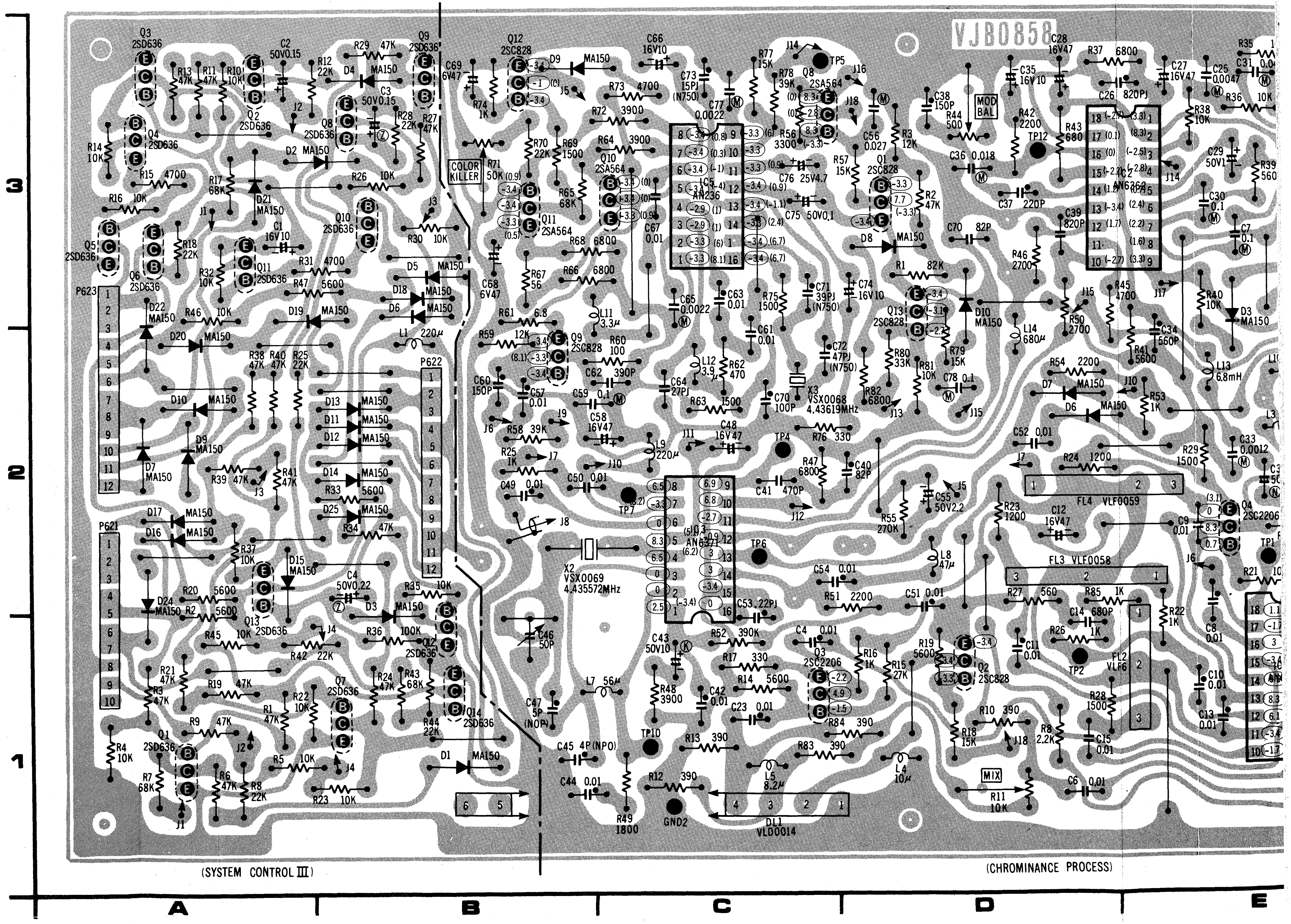
1	REC HOLD
2	REC HOLD
3	REC HOLD
4	REC Ⓛ
5	REC START
6	STILL INHIBIT
7	A.D. HOLD
8	A.D. HOLD
9	CUT IN HOLD
10	PRE ROLL END
11	LOADING END Ⓗ
12	PAUSE MUTE

P81

1	25Hz IN
2	D.O.C IN
3	D.O.C OUT
4	GND
5	REC 12V
6	NOT REC ⒽOUT
7	+12V
8	+12V
9	GND
10	VIDEO OUT IN

P82

1	ACK OUT
2	GND
3	P.B. CHROMA OUT
4	GND
5	VIDEO IN
6	GND
7	REC CHROMA OUT
8	GND
9	GND
10	P.B. 627KHz CHROMA


VJB0858
3
2
1
A
B
C
D
E
(SYSTEM CONTROL Ⅲ)
(CHROMINANCE PROCESS)
P621
P622
P623
COLOR KILLER
MOD BAL
MIX
AN6362
AN6371
VSX0068 4.43619MHz
VSX0069 4.435572MHz
FL3 VLF0058
FL4 VLF0059
DL1 VLD0014

CHROMINANCE PROCESS & SYSTEM CONTROL III & SUB SERVO CIRCUIT BOARD (VEP0858A1)

P621

1	CUT IN SW
2	A.D. SW
3	A.D. SW
4	REC SW
5	REC SW
6	REC INHIBIT
7	REC INHIBIT
8	GND
9	TIMER REC
10	

P622

1	A.D. START
2	PAUSE Ⓛ
3	PAUSE Ⓛ
4	+12V
5	+12V
6	EDIT SW
7	PLAY SW
8	PLAY SW
9	A.D. Ⓗ
10	+12V
11	+12V
12	PLAY Ⓗ

P623

1	REC HOLD
2	REC HOLD
3	REC HOLD
4	REC Ⓛ
5	REC START
6	STILL INHIBIT
7	A.D. HOLD
8	A.D. HOLD
9	CUT IN HOLD
10	PRE ROLL END
11	LOADING END Ⓗ
12	PAUSE MUTE

P81

1	25Hz IN
2	D.O.C IN
3	D.O.C OUT
4	GND
5	REC 12V
6	NOT REC Ⓗ OUT
7	+12V
8	+12V
9	GND
10	VIDEO OUT IN

P82

1	ACK OUT
2	GND
3	P.B. CHROMA OUT
4	GND
5	VIDEO IN
6	GND
7	REC CHROMA OUT
8	GND
9	GND
10	P.B. 627KHz CHROMA

P83

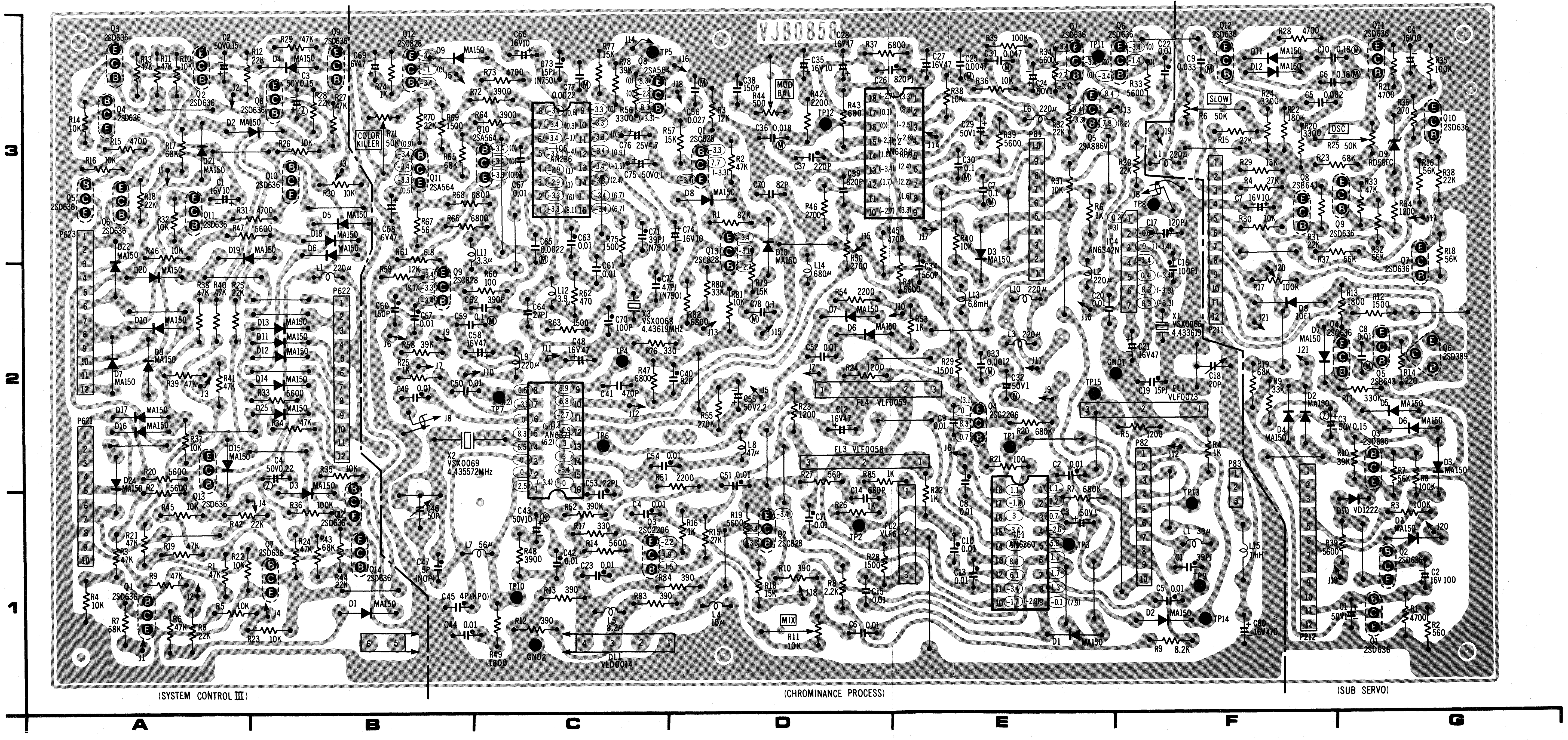
1	+12V OUT
2	
3	+12V OUT

P211

1	SLOW VR (1)
2	SLOW VR (2)
3	VSS IN
4	GND
5	MUTE
6	CTL AMP TR (B)
7	CTL MUTE
8	CAPSTAN BRAKE
9	CAPSTAN MOTOR
10	CAPSTAN MOTOR
12	UNREG +21V
13	UNREG +21V

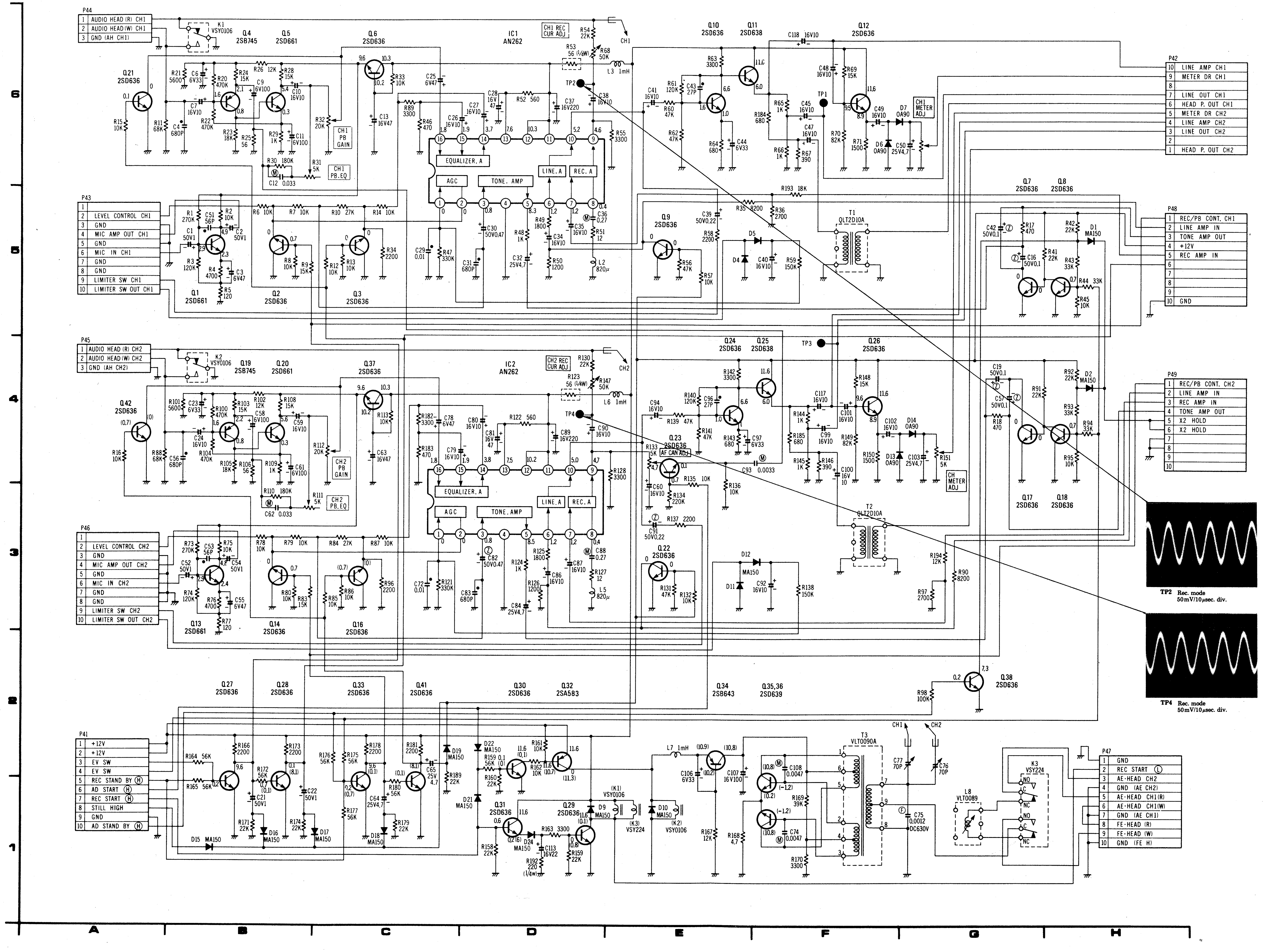
P212

1	STILL PULSE
2	FRAME ADV PULSE
3	FRAME ADV PULSE
4	SLOW Ⓗ
5	SLOW Ⓗ
6	STILL Ⓗ
7	STILL Ⓗ
8	STILL Ⓗ
9	STILL Ⓛ
10	CAPSTAN MOTOR ON
11	CAPSTAN SPEED
12	


VJB0858
(SYSTEM CONTROL III)
(CHROMINANCE PROCESS)
(SUB SERVO)
P623
P622
P621
P81
P82
P83
P211
P212
IC1 AN6362
IC2 AN6360
IC3 AN6371
IC4 AN6342N
IC5 AN236
X1 VSX0066 4.433619
X2 VSX0069 4.435572MHz
X3 VSX0068 4.43619MHz
FL1 VLF0073
FL2 VLF6
FL3 VLF0058
FL4 VLF0059
DL1 VLD0014
COLOR KILLER
MOD BAL
MIX
SLOW
OSC
TP1
TP2
TP3
TP4
TP5
TP6
TP7
TP8
TP9
TP10
TP11
TP12
TP13
TP14
TP15
GND1
GND2
1
2
3
A
B
C
D
E
F
G

(106) NV 8200

AUDIO SCHEMATIC DIAGRAM


P44
AUDIO HEAD (R) CH1
AUDIO HEAD (W) CH1
GND (AH CH1)
K1 VSY0106
Q4 2SB745
Q5 2SD661
Q6 2SD636
IC1 AN262
CH1 REC CUR ADJ
CH1
CH1 PB GAIN
CH1 PB.EQ
EQUALIZER. A
AGC
TONE. AMP
LINE. A
REC. A
TP2
L3 1mH
Q10 2SD636
Q11 2SD638
Q12 2SD636
TP1
CH1 METER ADJ
P42
LINE AMP CH1
METER DR CH1
LINE OUT CH1
HEAD P. OUT CH1
METER DR CH2
LINE AMP CH2
LINE OUT CH2
HEAD P. OUT CH2
Q21 2SD636
P43
LEVEL CONTROL CH1
GND
MIC AMP OUT CH1
MIC IN CH1
LIMITER SW CH1
LIMITER SW OUT CH1
Q1 2SD661
Q2 2SD636
Q3 2SD636
Q9 2SD636
T1 QLT2D10A
Q7 2SD636
Q8 2SD636
P48
REC/PB CONT. CH1
LINE AMP IN
TONE AMP OUT
+12V
REC AMP IN
GND
P45
AUDIO HEAD (R) CH2
AUDIO HEAD (W) CH2
GND (AH CH2)
K2 VSY0106
Q19 2SB745
Q20 2SD661
Q37 2SD636
IC2 AN262
CH2 REC CUR ADJ
CH2
L6 1mH
TP4
Q24 2SD636
Q25 2SD638
TP3
Q26 2SD636
P49
REC/PB CONT. CH2
LINE AMP IN
REC AMP IN
TONE AMP OUT
X2 HOLD
X2 HOLD
Q42 2SD636
CH2 PB GAIN
CH2 PB.EQ
Q23 2SD636
AF CAN ADJ
CH METER ADJ
Q17 2SD636
Q18 2SD636
T2 QLT2D10A
P46
LEVEL CONTROL CH2
GND
MIC AMP OUT CH2
MIC IN CH2
LIMITER SW CH2
LIMITER SW OUT CH2
Q13 2SD661
Q14 2SD636
Q16 2SD636
Q22 2SD636
Q27 2SD636
Q28 2SD636
Q33 2SD636
Q41 2SD636
Q30 2SD636
Q32 2SA583
Q34 2SB643
Q35,36 2SD639
Q38 2SD636
P41
+12V
+12V
EV SW
EV SW
REC STAND BY Ⓗ
AD START Ⓗ
REC START Ⓗ
STILL HIGH
GND
AD STAND BY Ⓗ
Q31 2SD636
Q29 2SD636
(K1) VSY0106
(K3) VSY224
(K2) VSY0106
L7 1mH
T3 VLT0090A
CH1
CH2
L8 VLT0089
K3 VSY224
P47
GND
REC START Ⓛ
AE-HEAD CH2
GND (AE CH2)
AE-HEAD CH1(R)
AE-HEAD CH1(W)
GND (AE CH1)
FE-HEAD (R)
FE-HEAD (W)
GND (FE H)
6
5
4
3
2
1
A
B
C
D
E
F
G
H

TP2 Rec. mode
50mV/10μsec. div.

TP4 Rec. mode
50mV/10μsec. div.

P41 Audio		
PIN NO.	SIGNAL NAME	D
1	+12V	P83-1 (Chrominan
2	+12V	P401-5 (Noise Red
3	EE/VV SW	P33-5 (Luminance
4	EE/VV SW	P609-7 (System C
5	REC Standby Ⓗ	P32-5 (Luminance
6	A.D Start Ⓗ	P622-1 (Chromina
7	REC Start Ⓗ	P623-5 (Chromina
8	Still Ⓗ	P212-8 (Chromina
9	GND	—
10	A.D Standby Ⓗ	P622-9 (Chromina

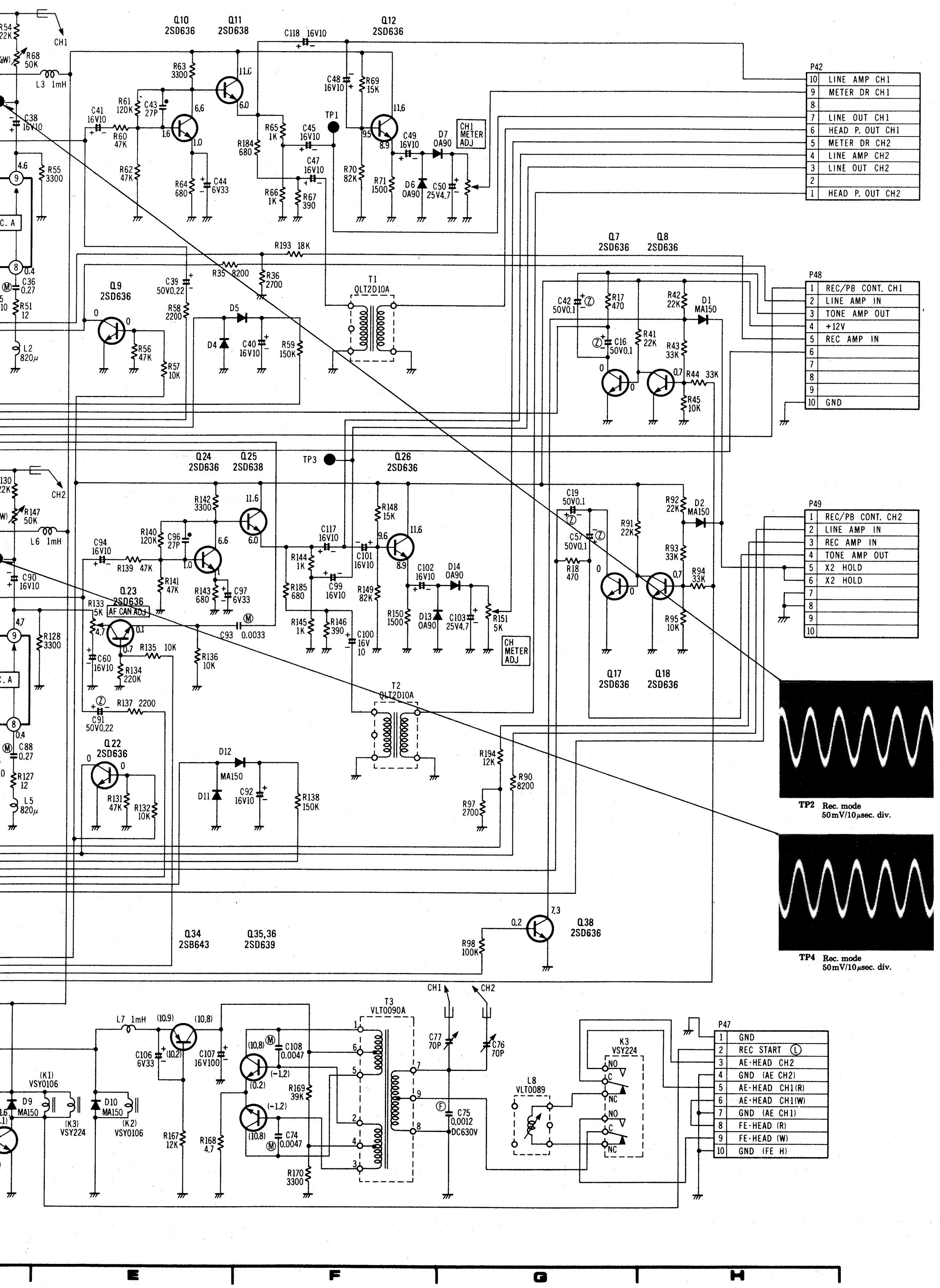
P42 Audio		
PIN NO.	SIGNAL NAME	D
1	Hfead P. OUT (CH2)	P661-1 (RF Conver
2	—	—
3	Line OUT (CH2)	P673-3 (Audio Inp
4	8P OUT (CH2)	P661-3 (RF Conver
5	Meter DR (CH2)	P650-2 (Lamp & M
6	Head P. OUT (CH1)	P661-2 (RF Conver
7	Line OUT (CH1)	P673-2 (Audio Inp
8	—	—
9	Meter DR (CH1)	P650-4 (Lamp & M
10	8P OUT (CH1)	P661-4 (RF Conver

P43 Audio		
PIN NO.	SIGNAL NAME	DEST
1	—	—
2	Level Control (CH1)	P652 (Audio Level V
3	GND	—
4	Mic Amp. OUT (CH1)	P652 (Audio Level V
5	GND	—
6	Mic IN (CH1)	P653-10 (Mic Jack)
7	GND	—
8	GND	—
9	Limiter SW (CH1)	P655-3 (Audio Limite
10	Limiter SW OUT (CH1)	P655-2 (Audio Limite

P44 Audio		
PIN NO.	SIGNAL NAME	DES
1	CH1 Audio Head (R)	H604-5
2	CH2 Audio Head (W)	H604-5
3	GND	—

P45 Audio		
PIN NO.	SIGNAL NAME	DES
1	CH2 Audio Head (R)	H604-4
2	CH2 Audio Head (W)	H604-4
3	GND	—

P46 Audio		
PIN NO.	SIGNAL NAME	DES
1	—	—
2	Level Control (CH2)	P651-2 (Audio Level
3	GND	—
4	Mic Amp. OUT (CH2)	P651-3 (Audio Level
5	GND	—
6	Mic IN (CH2)	P653-2 (Mic Jack)
7	GND	—
8	GND	—
9	Limiter SW (CH2)	P655-5
10	Limiter SW OUT (CH2)	P655-4


Q10 2SD636
Q11 2SD638
Q12 2SD636
CH1
L3 1mH
TP1
CH1 METER ADJ
P42
10 LINE AMP CH1
9 METER DR CH1
8
7 LINE OUT CH1
6 HEAD P. OUT CH1
5 METER DR CH2
4 LINE AMP CH2
3 LINE OUT CH2
2
1 HEAD P. OUT CH2
Q7 2SD636
Q8 2SD636
Q9 2SD636
T1 QLT2D10A
P48
1 REC/PB CONT. CH1
2 LINE AMP IN
3 TONE AMP OUT
4 +12V
5 REC AMP IN
6
7
8
9
10 GND
CH2
L6 1mH
Q24 2SD636
Q25 2SD638
TP3
Q26 2SD636
Q23 2SD636
AF CAN ADJ
CH METER ADJ
P49
1 REC/PB CONT. CH2
2 LINE AMP IN
3 REC AMP IN
4 TONE AMP OUT
5 X2 HOLD
6 X2 HOLD
7
8
9
10
Q17 2SD636
Q18 2SD636
T2 QLT2D10A
Q22 2SD636
TP2 Rec. mode 50mV/10μsec. div.
TP4 Rec. mode 50mV/10μsec. div.
Q34 2SB643
Q35,36 2SD639
Q38 2SD636
T3 VLT0090A
L7 1mH
L8 VLT0089
K3 VSY224
(K1) VSY0106
(K3) VSY224
(K2) VSY0106
P47
1 GND
2 REC START Ⓛ
3 AE-HEAD CH2
4 GND (AE CH2)
5 AE-HEAD CH1(R)
6 AE-HEAD CH1(W)
7 GND (AE CH1)
8 FE-HEAD (R)
9 FE-HEAD (W)
10 GND (FE H)
E
F
G
H

P41 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	+12V	P83-1 (Chrominance Process)
2	+12V	P401-5 (Noise Reduction)
3	EE/VV SW	P33-5 (Luminance Process)
4	EE/VV SW	P609-7 (System Control II)
5	REC Standby Ⓗ	P32-5 (Luminance Process)
6	A.D Start Ⓗ	P622-1 (Chrominance Process)
7	REC Start Ⓗ	P623-5 (Chrominance Process)
8	Still Ⓗ	P212-8 (Chrominance Process)
9	GND	—
10	A.D Standby Ⓗ	P622-9 (Chrominance Process)

P42 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	Hfead P. OUT (CH2)	P661-1 (RF Converter)
2	—	—
3	Line OUT (CH2)	P673-3 (Audio Input & Video Output)
4	8P OUT (CH2)	P661-3 (RF Converter)
5	Meter DR (CH2)	P650-2 (Lamp & Meter)
6	Head P. OUT (CH1)	P661-2 (RF Converter)
7	Line OUT (CH1)	P673-2 (Audio Input & Video Output)
8	—	—
9	Meter DR (CH1)	P650-4 (Lamp & Meter)
10	8P OUT (CH1)	P661-4 (RF Converter)

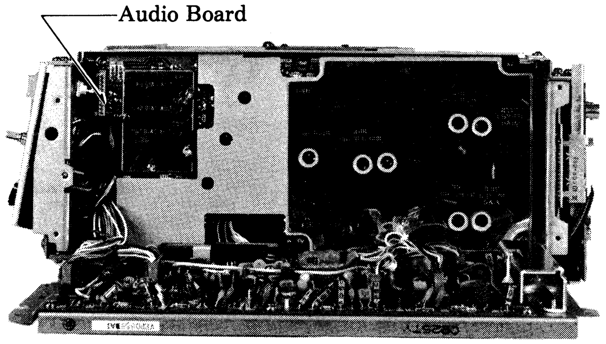
P43 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	—	—
2	Level Control (CH1)	P652 (Audio Level VR)
3	GND	—
4	Mic Amp. OUT (CH1)	P652 (Audio Level VR)
5	GND	—
6	Mic IN (CH1)	P653-10 (Mic Jack)
7	GND	—
8	GND	—
9	Limiter SW (CH1)	P655-3 (Audio Limiter)
10	Limiter SW OUT (CH1)	P655-2 (Audio Limiter)

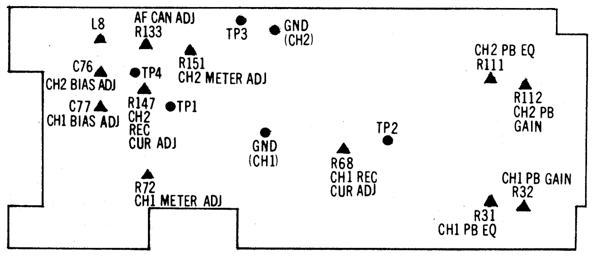
P44 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	CH1 Audio Head (R)	H604-5
2	CH2 Audio Head (W)	H604-5
3	GND	—

P45 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	CH2 Audio Head (R)	H604-4
2	CH2 Audio Head (W)	H604-4
3	GND	—

P46 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	—	—
2	Level Control (CH2)	P651-2 (Audio Level VR)
3	GND	—
4	Mic Amp. OUT (CH2)	P651-3 (Audio Level VR)
5	GND	—
6	Mic IN (CH2)	P653-2 (Mic Jack)
7	GND	—
8	GND	—
9	Limiter SW (CH2)	P655-5
10	Limiter SW OUT (CH2)	P655-4

P47 Audio (VEP0446A1)		
PIN NO.	SIGNAL NAME	DESTINATION
1	GND	—
2	REC Start Ⓛ	P34-8 (Luminance Process)
3	AE Head CH	P612-10 (Control Head)
4	GND	—
5	AE Head CH (R)	P612-8 (Control Head)
6	AE Head CH (W)	P612-7 (Control Head)
7	GND	—
8	F.E Head (R)	H606
9	F.E Head (W)	H606
10	GND	—


Audio Board


L8
AF CAN ADJ
R133
TP3
GND (CH2)
C76
CH2 BIAS ADJ
TP4
R151
CH2 METER ADJ
C77
CH1 BIAS ADJ
R147
CH2
REC
CUR ADJ
TP1
GND (CH1)
R72
CH1 METER ADJ
R68
CH1 REC
CUR ADJ
TP2
CH2 PB EQ
R111
R112
CH2 PB
GAIN
CH1 PB GAIN
R32
R31
CH1 PB EQ

P48 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	R/P OUT CH1	P401-2 (Noise Reduction)
2	Line Amp IN	P401-4 (Noise Reduction)
3	Tone Amp OUT	P401-1 (Noise Reduction)
4	+12V	—
5	REC Amp IN	P401-3 (Noise Reduction)
6	—	—
7	—	—
8	—	—
9	—	—
10	GND	P401-8 (Noise Reduction)

P49 Audio		
PIN NO.	SIGNAL NAME	DESTINATION
1	R/P Cont CH2	P401-9
2	Line Amp IN	P401-7
3	REC Amp IN	P401-6
4	Tone Amp OUT	P401-10
5	X2 Hold	P604-4 (System Control I)
6	X2 Hold	P21-5 (Servo)
7	—	—
8	—	—
9	—	—
10	—	—

AUDIO CURCUIT BOARD (VEP0451A1)

P47

1	GND
2	REC START Ⓛ
3	AE·HEAD CH
4	GND (AE CH2)
5	AE·HEAD CH1 (R)
6	AE·HEAD CH1 (W)
7	GND (AE CH1)
8	FE·HEAD (R)
9	FE·HEAD W
10	GND (FE H)

P41

1	+12V
2	+12V
3	EV SW
4	EV SW
5	REC STAND BY Ⓗ
6	AD START Ⓗ
7	REC START Ⓗ
8	STILL Ⓗ
9	GND
10	AD STAND BY Ⓗ

P42

1	HEAD PH. OUT CH2
2	
3	LINE OUT CH2
4	LINE AMP CH2
5	METER DR. CH2
6	HEAD PH. OUT CH1
7	LINE OUT CH1
8	
9	METER DR. CH1
10	LINE AMP CH1

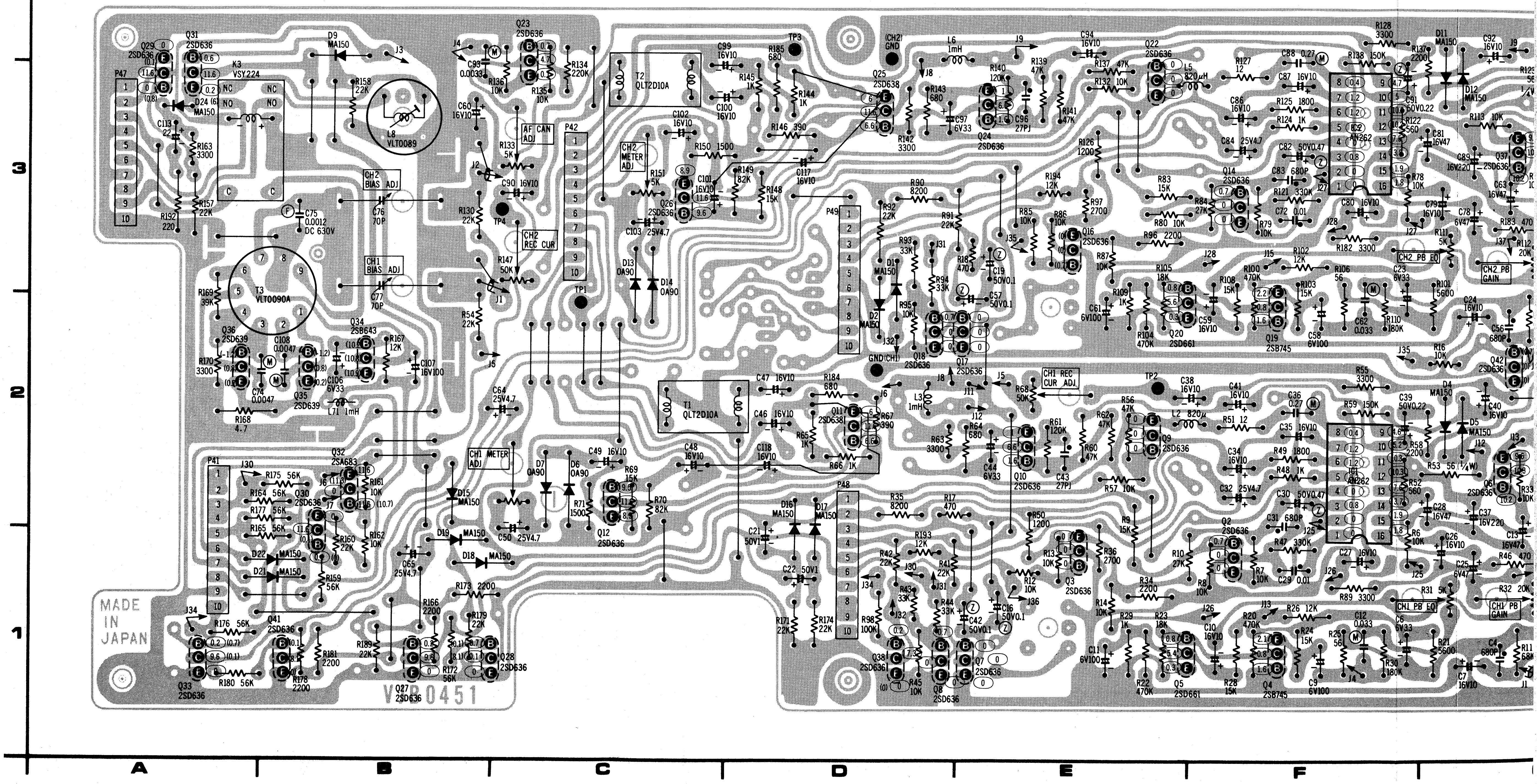
P49

1	REC/PB CONT CH2
2	LINE AMP IN
3	REC AMP IN
4	TONE AMP OUT
5	X2 HOLD
6	X2 HOLD
7	
8	
9	
10	

P48

1	REC/PB C
2	LINE AMP
3	TONE AMF
4	+12V
5	REC AMP
6	
7	
8	
9	
10	GND

Audio	
Q1	G-2
Q2	F-1
Q3	E-1
Q4	F-1
Q5	E-1
Q6	G-2
Q7	E-1
Q8	D-1
Q9	E-2
Q10	E-2
Q11	D-2
Q12	C-2
Q13	G-3
Q14	F-3
Q16	E-3
Q17	E-2
Q18	D-2
Q19	F-3
Q20	F-3
Q21	G-1
Q22	E-3
Q23	C-4
Q24	E-3
Q25	D-3
Q26	C-3
Q27	B-1
Q28	B-1
Q29	A-3
Q30	B-1
Q31	A-3
Q32	B-2
Q33	A-1
Q34	B-2
Q35	B-2
Q36	A-2
Q37	G-3
Q38	D-1
Q41	B-1
Q42	G-2


4
3
2
1
A
B
C
D
E
F
MADE IN JAPAN
VEP0451
P47
P41
P42
P48
P49
TP1
TP2
TP3
TP4
GND (CH1)
(CH2) GND
K3 VSY224
L8 VLT0089
T3 VLT0090A
T1 QLT2D10A
T2 QLT2D10A
AN262
AF CAN ADJ
CH2 BIAS ADJ
CH1 BIAS ADJ
CH2 METER ADJ
CH1 METER ADJ
CH2 REC CUR
CH1 REC CUR ADJ
CH2 PB EQ
CH1 PB EQ
CH2 PB GAIN
CH1 PB GAIN

451A1)

(107) NV 8200

P47

1	GND
2	REC START Ⓛ
3	AE·HEAD CH
4	GND (AE CH2)
5	AE·HEAD CH1 (R)
6	AE·HEAD CH1 (W)
7	GND (AE CH1)
8	FE·HEAD (R)
9	FE·HEAD W
10	GND (FE H)

P41

1	+12V
2	+12V
3	EV SW
4	EV SW
5	REC STAND BY Ⓗ
6	AD START Ⓗ
7	REC START Ⓗ
8	STILL Ⓗ
9	GND
10	AD STAND BY Ⓗ

P42

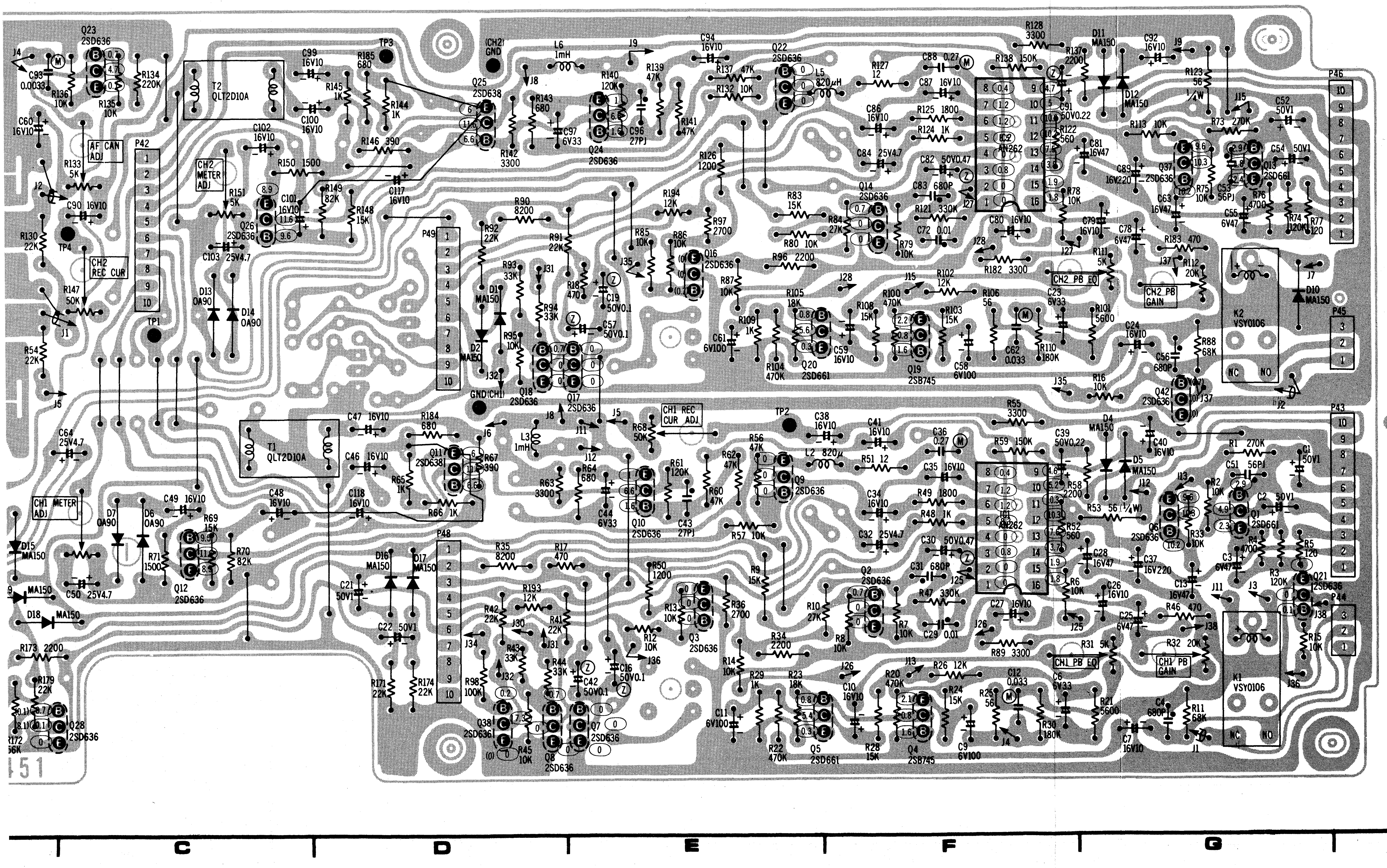
1	HEAD PH. OUT CH2
2	
3	LINE OUT CH2
4	LINE AMP CH2
5	METER DR. CH2
6	HEAD PH. OUT CH1
7	LINE OUT CH1
8	
9	METER DR. CH1
10	LINE AMP CH1

P49

1	REC/PB CONT CH2
2	LINE AMP IN
3	REC AMP IN
4	TONE AMP OUT
5	X2 HOLD
6	X2 HOLD
7	
8	
9	
10	

P48

1	REC/PB CONT CH1
2	LINE AMP IN
3	TONE AMP OUT
4	+12V
5	REC AMP IN
6	
7	
8	
9	
10	GND



Q23 2SD636
C93 0.0033
R136 10K
R135 10K
R134 220K
C60 16V10
AF CAN ADJ
R133 5K
J2
C90 16V10
R130 22K
TP4
CH2 REC CUR
R147 50K
J1
R54 22K
J5
T2 QLT2D10A
C99 16V10
R185 680
TP3
R145 1K
R144 1K
C100 16V10
C102 16V10
CH2 METER ADJ
R150 1500
R151 5K
C101 16V10
R149 82K
R148 15K
C117 16V10
Q26 2SD636
C103 25V4.7
D13 0A90
D14 0A90
TP1
P42
Q25 2SD638
R146 390
(CH2) GND
L6 1mH
J8
R143 680
C97 6V33
R142 3300
J9
R140 120K
C98 27PJ
Q24 2SD636
R139 47K
R141 47K
C94 16V10
R137 47K
R132 10K
Q22 2SD636
L5 820μH
R126 1200
R90 8200
R92 22K
R91 22K
R93 33K
J31
D1 MA150
R94 33K
R18 470
C19 50V0.1
C57 50V0.1
R95 10K
D2 MA150
J32
Q18 2SD636
Q17 2SD636
GND (CH1)
P49
R194 12K
R97 2700
R85 10K
R86 10K
J35
Q16 2SD636
R87 10K
R127 12
C88 0.27
C87 16V10
C86 16V10
R125 1800
R124 1K
C84 25V4.7
C82 50V0.47
C83 680P
Q14 2SD636
R83 15K
R84 27K
R121 330K
C72 0.01
R79 10K
R80 10K
R96 2200
J28
R128 3300
R138 150K
R137 2200
IC2 AN262
D11 MA150
D12 MA150
C92 16V10
J9
R123 56 ¼W
R122 560
C91 50V0.22
C81 16V47
C80 16V10
R78 10K
C79 16V10
C78 6V47
R182 3300
J27
R111 5K
CH2 PB EQ
R113 10K
Q3 2SD636
C89 16V220
R73 270K
J15
C52 50V1
C53 56PJ
Q13 2SD661
C54 50V1
R75 10K
R76 4700
C63 16V47
C55 6V47
R74 120K
R77 120
R183 470
J37
R112 20K
CH2 PB GAIN
J7
D10 MA150
K2 VSY0106
NC
NO
P46
P45
J15
R102 12K
R100 470K
R103 15K
R106 56
R105 18K
R108 15K
R109 1K
C61 6V100
C59 16V10
Q20 2SD661
R104 470K
Q19 2SB745
C58 6V100
C62 0.033
R110 180K
C23 6V33
R101 5600
C24 16V10
C56 680P
R88 68K
Q42 2SD636
J37
J2
R16 10K
J35
T1 QLT2D10A
C47 16V10
R184 680
C46 16V10
C64 25V4.7
Q11 2SD638
R67 390
R65 1K
R66 1K
C48 16V10
C118 16V10
CH1 METER ADJ
D7 0A90
D6 0A90
C49 16V10
R69 15K
R70 82K
R71 1500
Q12 2SD636
D15 MA150
C50 25V4.7
D18 MA150
R173 2200
R179 22K
R172 56K
Q28 2SD636
C21 50V1
D16 MA150
D17 MA150
C22 50V1
P48
R35 8200
R17 470
R193 12K
R42 22K
J30
R41 22K
J34
R43 33K
R44 33K
J33
J32
J31
R98 100K
R171 22K
R174 22K
Q38 2SD636
R45 10K
Q8 2SD636
Q7 2SD636
C42 50V0.1
C16 50V0.1
J36
L3 1mH
J6
J11
J12
R63 3300
R64 680
C44 6V33
Q10 2SD636
R68 50K
CH1 REC CUR ADJ
R61 120K
C43 27PJ
R60 47K
R50 1200
R12 10K
R13 10K
Q3 2SD636
R14 10K
TP2
C38 16V10
C41 16V10
R56 47K
R62 47K
Q9 2SD636
L2 820μ
R51 12
C36 0.27
C35 16V10
R57 10K
R9 15K
R36 2700
R34 2200
R29 1K
R23 18K
C11 6V100
R22 470K
Q5 2SD661
C10 16V10
R28 15K
J26
J13
R20 470K
R26 12K
R24 15K
Q4 2SB745
C9 6V100
R25 56
J4
C12 0.033
R30 180K
C34 16V10
R49 1800
R48 1K
C32 25V4.7
C30 50V0.47
C31 680P
Q2 2SD636
R47 330K
C29 0.01
R10 27K
R8 10K
R7 10K
R55 3300
R59 150K
C39 50V0.22
IC1 AN262
R58 2200
R52 560
C28 16V47
C27 16V10
J25
R6 10K
C26 16V10
C25 6V47
R89 3300
R31 5K
CH1 PB EQ
C6 6V33
R21 5600
C7 16V10
D4 MA150
D5 MA150
C40 16V10
R53 56 (¼W)
C37 16V220
Q6 2SD636
R1 270K
C51 56PJ
C1 50V1
R2 10K
Q1 2SD661
C2 50V1
R33 10K
R4 4700
R5 120
C3 6V47
C13 16V47
R46 470
J38
R32 20K
CH1 PB GAIN
C4 680P
R11 68K
J1
R3 120K
Q21 2SD636
J3
J11
R15 10K
J36
K1 VSY0106
NC
NO
P43
P44
TP2
151
C
D
E
F
G
H

P46

1	
2	LEVEL CONTROL CH2
3	GND
4	MIC AMP OUT CH2
5	GND
6	MIC IN CH2
7	GND
8	GND
9	LIMITER SW CH2
10	LIMITER SW OUT CH2

P45

1	AUDIO HEAD (R) CH2
2	AUDIO HEAD (W) CH2
3	GND (AH CH2)

P43

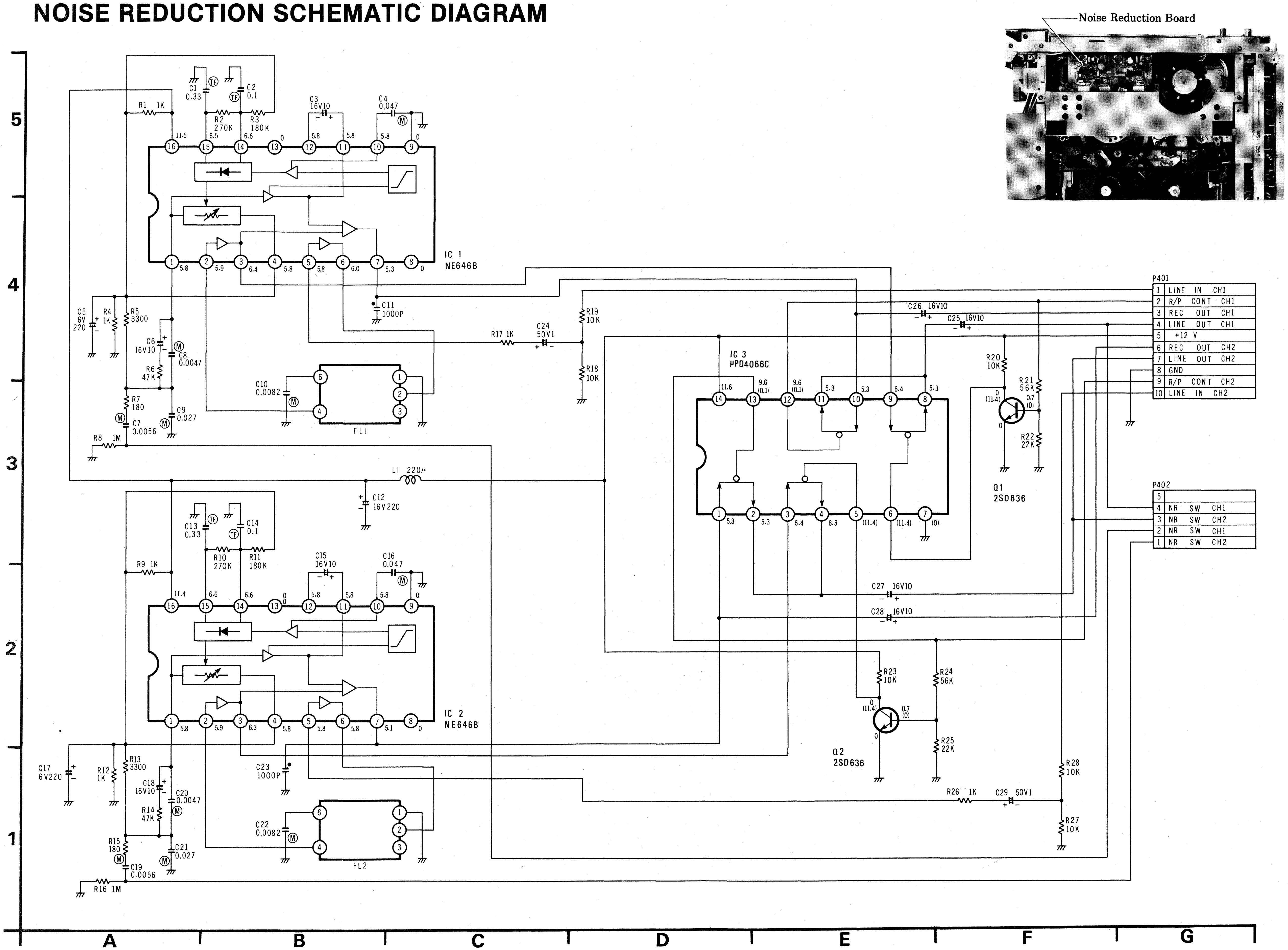
1	
2	LEVEL CONTROL CH1
3	GND
4	MIC AMP OUT CH1
5	GND
6	MIC IN CH1
7	GND
8	GND
9	LIMITER SW CH1
10	LIMITER SW OUT CH1

P44

1	AUDIO HEAD (R) CH1
2	AUDIO HEAD (W) CH1
3	GND (AH CH1)

(108) NV 8200

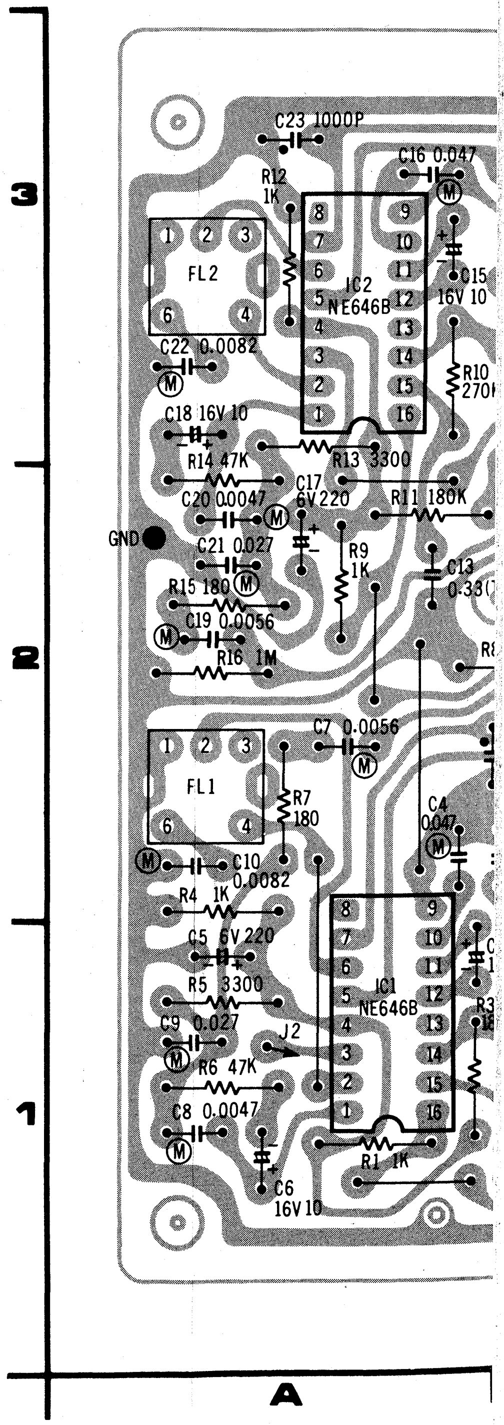
NOISE REDUCTION SCHEMATIC DIAGRAM

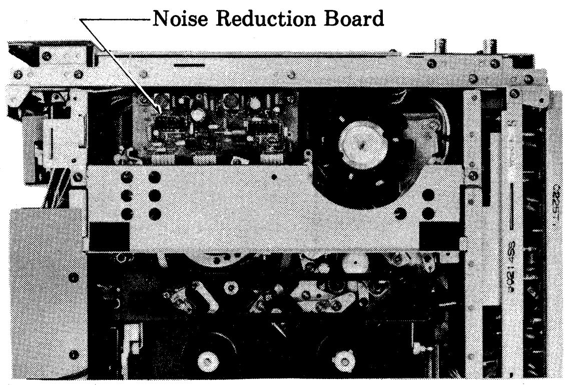

IC 1
NE646B
IC 2
NE646B
IC 3
μPD4066C
Q1
2SD636
Q2
2SD636
P401
1 LINE IN CH1
2 R/P CONT CH1
3 REC OUT CH1
4 LINE OUT CH1
5 +12 V
6 REC OUT CH2
7 LINE OUT CH2
8 GND
9 R/P CONT CH2
10 LINE IN CH2
P402
5
4 NR SW CH1
3 NR SW CH2
2 NR SW CH1
1 NR SW CH2
R1 1K
R2 270K
R3 180K
C1 0.33
C2 0.1
C3 16V10
C4 0.047
C5 6V 220
R4 1K
R5 3300
C6 16V10
C8 0.0047
R6 47K
R7 180
C7 0.0056
C9 0.027
R8 1M
C10 0.0082
FL1
C11 1000P
R17 1K
C24 50V1
R19 10K
R18 10K
L1 220μ
C12 16V220
C13 0.33
C14 0.1
R9 1K
R10 270K
R11 180K
C15 16V10
C16 0.047
C17 6V220
R12 1K
R13 3300
C18 16V10
C20 0.0047
R14 47K
R15 180
C19 0.0056
C21 0.027
R16 1M
C22 0.0082
C23 1000P
FL2
C26 16V10
C25 16V10
C27 16V10
C28 16V10
R20 10K
R21 56K
R22 22K
R23 10K
R24 56K
R25 22K
R26 1K
C29 50V1
R28 10K
R27 10K
1
2
3
4
5
A
B
C
D
E
F
G

Noise Reduction Board

NOISE REDUCTIO

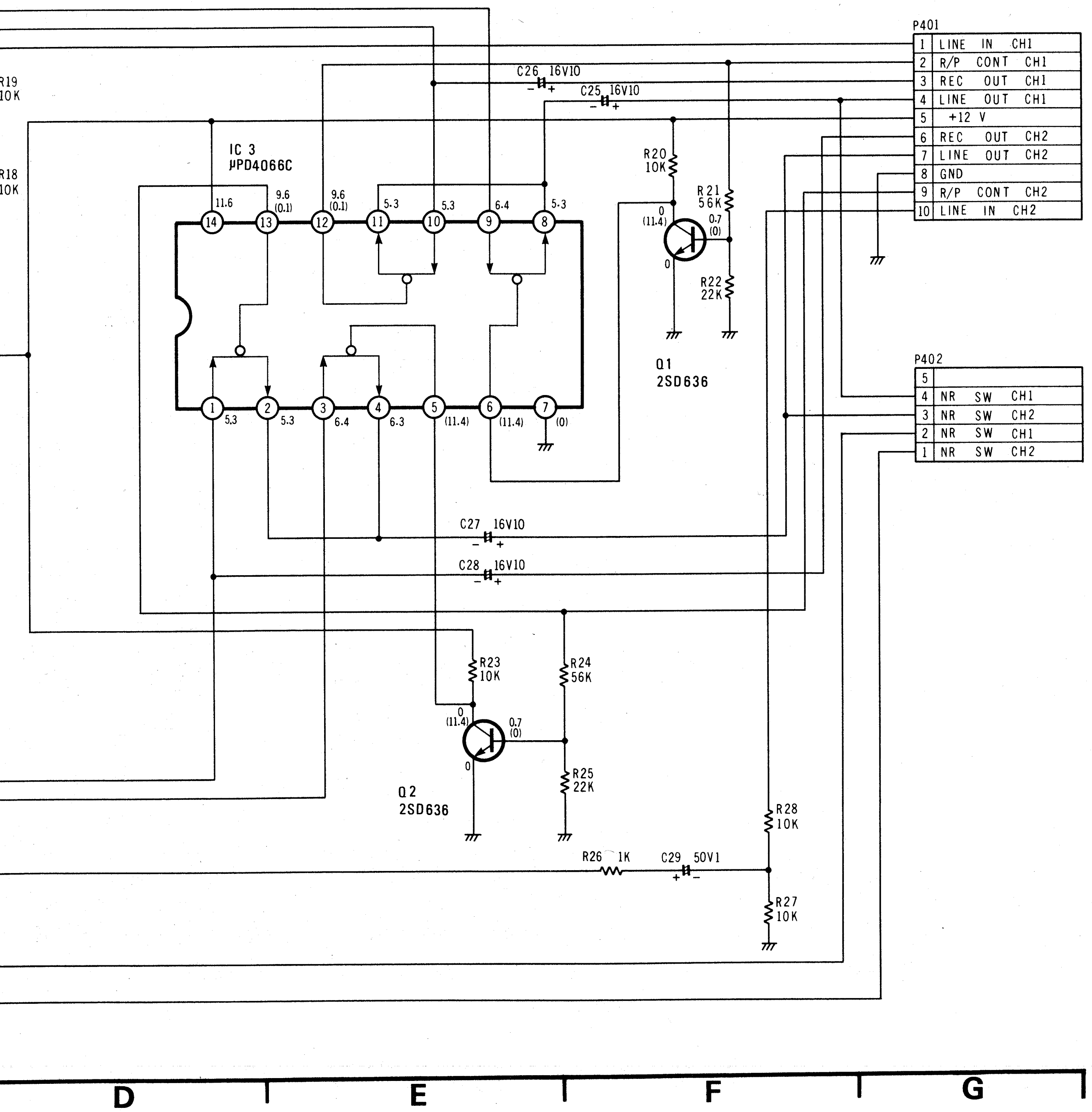
PIN NO.	SIGNAL NAME	P401 Noise Reduction
1	Line IN CH1	P48-3 (Audio)
2	R/P Cont CH1	P48-1 (Audio)
3	REC OUT CH1	P48-5 (Audio)
4	Line OUT CH1	P48-2 (Audio)
5	+ 12V	P41-2 (Audio)
6	REC OUT CH1	P49-3 (Audio)
7	Line OUT CH2	P49-2 (Audio)
8	GND	P48-10 (Audio)
9	R/P Cont CH2	P49-1 (Audio)
10	Line IN CH2	P49-4 (Audio)

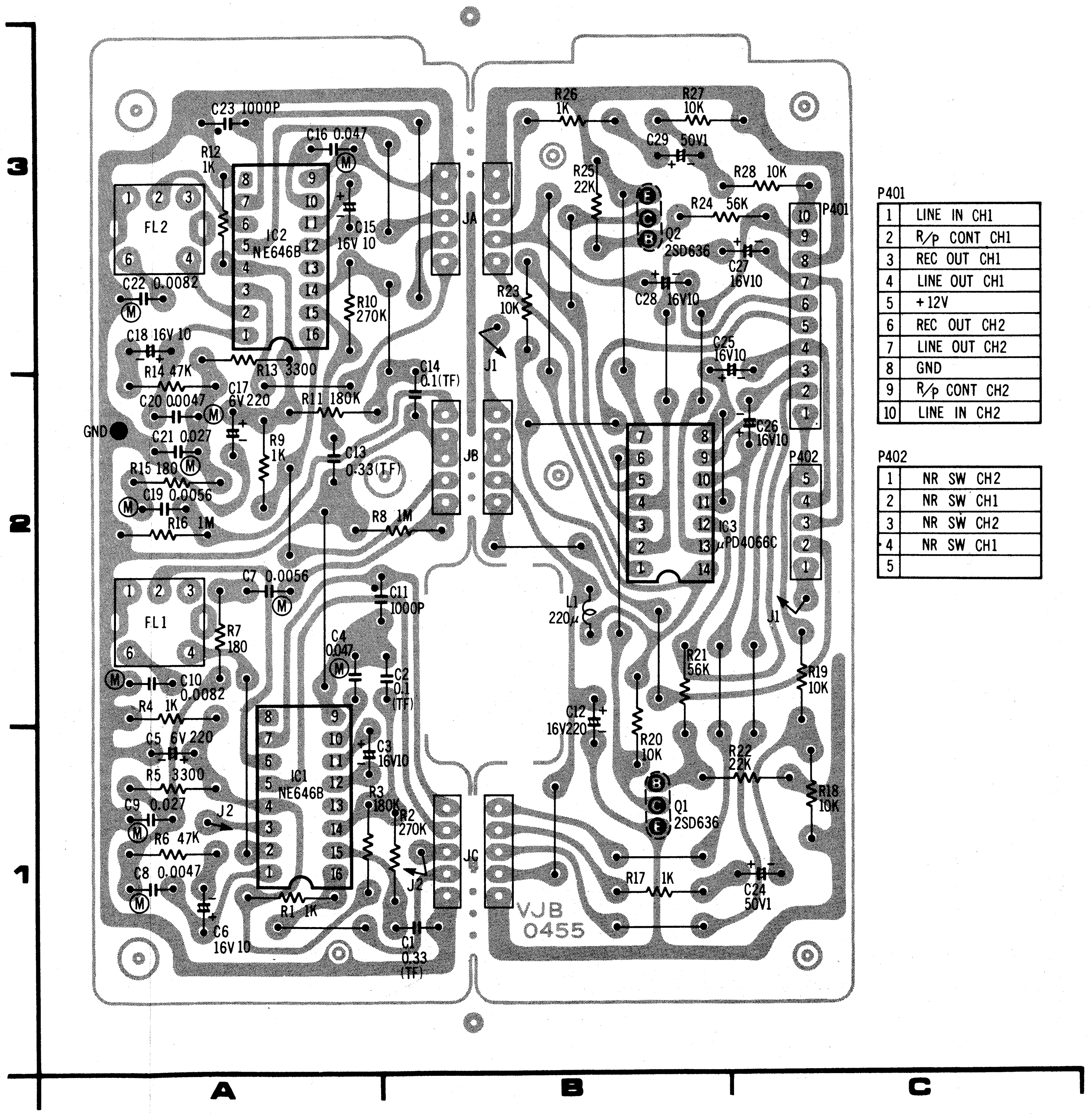

C23 1000P
C16 0.047
R12 1K
FL2
IC2 NE646B
C15 16V 10
C22 0.0082
R10 270
C18 16V 10
R14 47K
R13 3300
C17 6V 220
C20 0.0047
R11 180K
GND
C21 0.027
R9 1K
C13 0.33
R15 180
C19 0.0056
R16 1M
C7 0.0056
FL1
R7 180
C4 0.047
C10 0.0082
R4 1K
C5 6V 220
R5 3300
C9 0.027
J2
IC1 NE646B
R6 47K
C8 0.0047
R1 1K
C6 16V 10
3
2
1
A


Noise Reduction Board

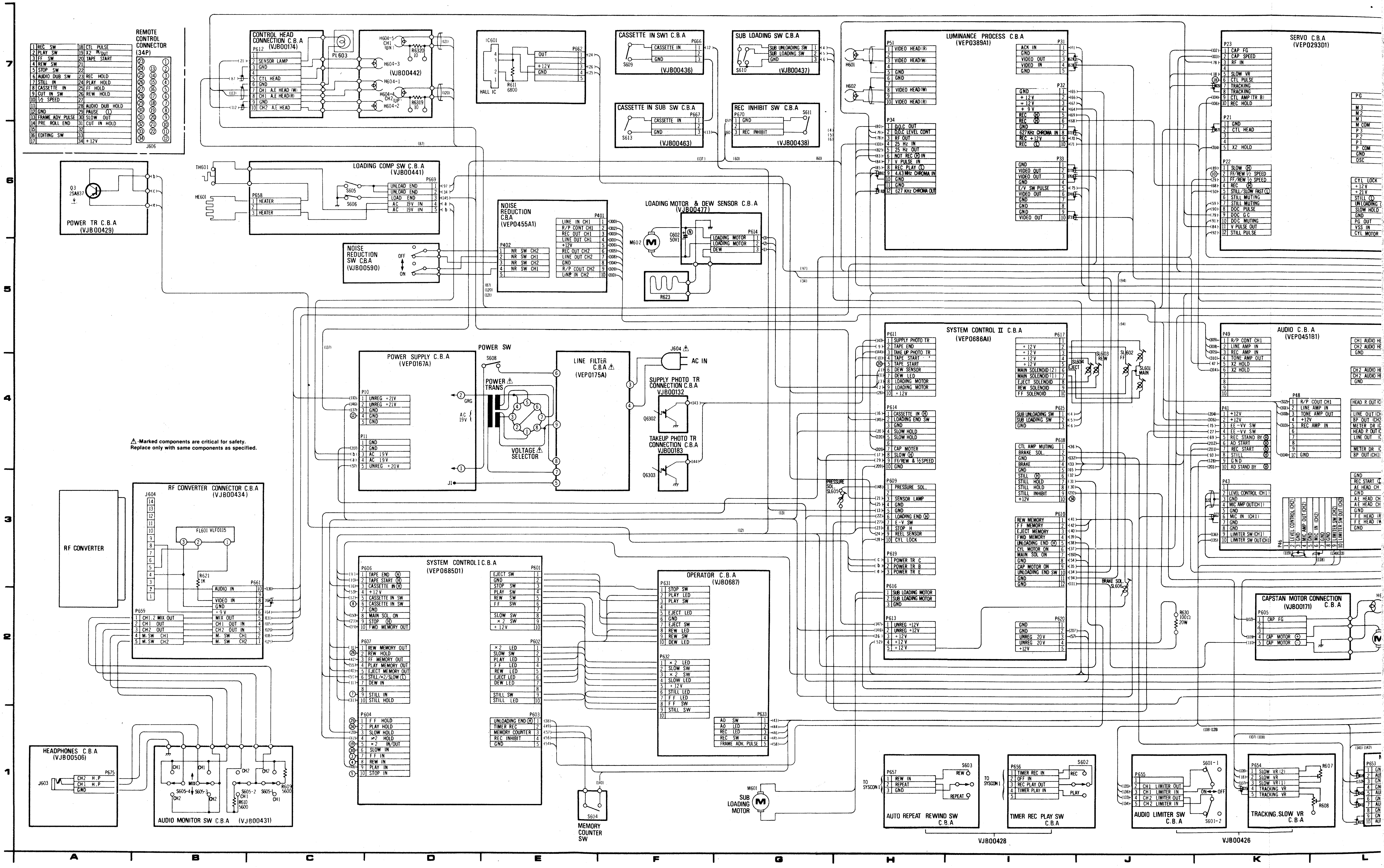
NOISE REDUCTION CIRCUIT BOARD (VEP0455A1)

P401 Noise Reduction		
PIN NO.	SIGNAL NAME	DESTINATION
1	Line IN CH1	P48-3 (Audio)
2	R/P Cont CH1	P48-1 (Audio)
3	REC OUT CH1	P48-5 (Audio)
4	Line OUT CH1	P48-2 (Audio)
5	+ 12V	P41-2 (Audio)
6	REC OUT CH1	P49-3 (Audio)
7	Line OUT CH2	P49-2 (Audio)
8	GND	P48-10 (Audio)
9	R/P Cont CH2	P49-1 (Audio)
10	Line IN CH2	P49-4 (Audio)


R19
10K
R18
10K
IC 3
μPD4066C
C26 16V10
C25 16V10
R20
10K
R21
56K
R22
22K
Q1
2SD636
P401
1 LINE IN CH1
2 R/P CONT CH1
3 REC OUT CH1
4 LINE OUT CH1
5 +12 V
6 REC OUT CH2
7 LINE OUT CH2
8 GND
9 R/P CONT CH2
10 LINE IN CH2
P402
5
4 NR SW CH1
3 NR SW CH2
2 NR SW CH1
1 NR SW CH2
C27 16V10
C28 16V10
R23
10K
R24
56K
R25
22K
Q2
2SD636
R28
10K
R26 1K
C29 50V1
R27
10K
D
E
F
G


3
2
1
A
B
C
C23 1000P
C16 0.047
R12
1K
FL2
IC2
NE646B
C15
16V 10
C22 0.0082
R10
270K
C18 16V 10
R14 47K
R13 3300
C20 0.0047
C17
6V 220
R11 180K
C14
0.1(TF)
GND
C21 0.027
R9
1K
C13
0.33(TF)
R15 180
C19 0.0056
R16 1M
R8 1M
JA
JB
JC
J1
J2
R26
1K
R27
10K
C29 50V1
R25
22K
R28 10K
R24 56K
Q2
2SD636
C27
16V10
C28 16V10
R23
10K
C25
16V10
C26
16V10
IC3
μPD4066C
P401
P402
C7 0.0056
C11
1000P
FL1
R7
180
C4
0.047
C2
0.1
(TF)
C10
0.0082
R4 1K
C5 6V 220
C3
16V10
R5 3300
IC1
NE646B
C9 0.027
R3
180K
R2
270K
R6 47K
C8 0.0047
R1 1K
C6
16V 10
C1
0.33
(TF)
L1
220μ
C12
16V220
R21
56K
R19
10K
R20
10K
R22
22K
Q1
2SD636
R18
10K
R17 1K
C24
50V1
VJB
0455
P401
1 LINE IN CH1
2 R/P CONT CH1
3 REC OUT CH1
4 LINE OUT CH1
5 +12V
6 REC OUT CH2
7 LINE OUT CH2
8 GND
9 R/P CONT CH2
10 LINE IN CH2
P402
1 NR SW CH2
2 NR SW CH1
3 NR SW CH2
4 NR SW CH1
5

NV-8200 INTERCONNECTION SCHEMATIC DIAGRAM


REMOTE CONTROL CONNECTOR (34P)
J606
CONTROL HEAD CONNECTION C.B.A (VJB00174)
P612
PL603
(VJB00442)
H604-1
H604-2
H604-3
IC601
HALL IC
R611 6800
CASSETTE IN SW1 C.B.A
P666
S609
(VJB00436)
SUB LOADING SW C.B.A
S610
(VJB00437)
CASSETTE IN SUB SW C.B.A
P667
S613
(VJB00463)
REC INHIBIT SW C.B.A
P670
S611
(VJB00438)
LUMINANCE PROCESS C.B.A (VEP03891A1)
P51
P31
P32
P33
P34
H601
H602
SERVO C.B.A (VEP02930D1)
P23
P21
P22
Q3 2SA837
POWER TR C.B.A (VJB00429)
TH601
HE601
LOADING COMP SW C.B.A (VJB00441)
P658
P669
S605
S606
NOISE REDUCTION C.B.A (VEP0455A1)
P401
P402
NOISE REDUCTION SW C.B.A (VJB00590)
OFF
ON
LOADING MOTOR & DEW SENSOR C.B.A (VJB00477)
P614
M602
C602 50V1
R623
SYSTEM CONTROL II C.B.A (VEP0686A1)
P611
P617
P614
P615
P618
P609
P610
P619
P616
P613
P620
SL603 REW
SL602 FF
SL601 MAIN
SL604 EJECT
PRESSURE SOL. SL605
BRAKE SOL. SL606
R630 100Ω 20W
AUDIO C.B.A (VEP0451B1)
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P48
P41
P43
P46
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P11
J1
POWER SW
S608
POWER TRANS
AC 19V
VOLTAGE SELECTOR
LINE FILTER C.B.A (VEP0175A)
J604
AC IN
SUPPLY PHOTO TR CONNECTION C.B.A VJB00132
Q6302
TAKEUP PHOTO TR CONNECTION C.B.A VJB00183
Q6303
RF CONVERTER
RF CONVERTER CONNECTOR C.B.A (VJB00434)
J604
FL601 VLF0115
R621 1K
P661
P659
SYSTEM CONTROL I C.B.A (VEP0685D1)
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P601
P607
P602
P604
P603
OPERATOR C.B.A (VJB0687)
P631
P632
P633
CAPSTAN MOTOR CONNECTION C.B.A (VJB00171)
P605
HEADPHONES C.B.A (VJB00506)
J603
P675
AUDIO MONITOR SW C.B.A (VJB00431)
S605-1
S605-2
S605-3
R609 5600
R610 5600
S604
MEMORY COUNTER SW
M601
SUB LOADING MOTOR
TO SYSCON I
P657
S603
AUTO REPEAT REWIND SW C.B.A
P656
S602
TIMER REC PLAY SW C.B.A
VJB00428
P655
S601-1
S601-2
AUDIO LIMITER SW C.B.A
P654
R607
R608
TRACKING.SLOW VR C.B.A
VJB00426
P653
A
B
C
D
E
F
G
H
I
J
K
L
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⚠-Marked components are critical for safety.
Replace only with same components as specified.

HEMATIC DIAGRAM

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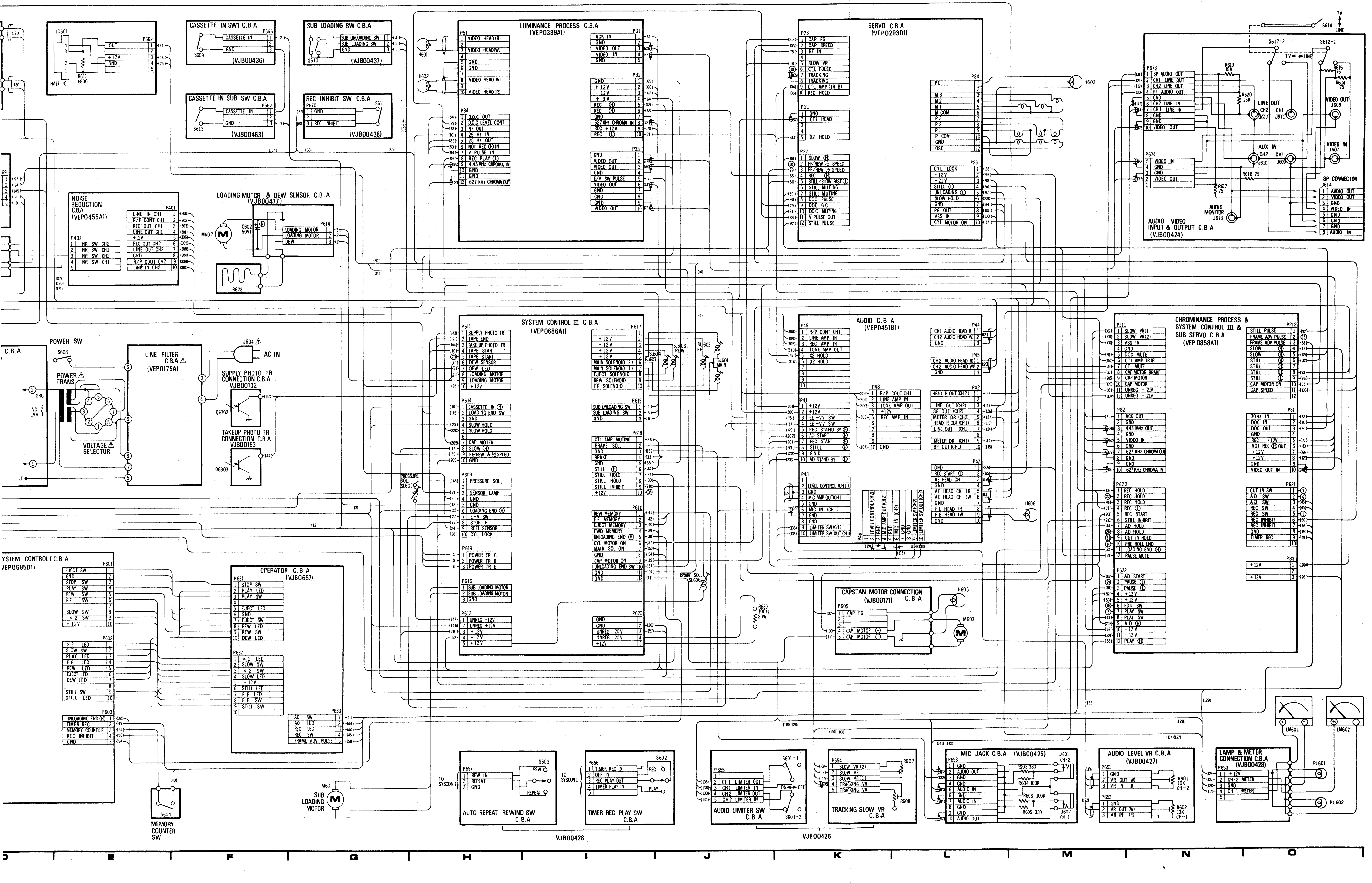
CASSETTE IN SW1 C.B.A (VJB00436)
SUB LOADING SW C.B.A (VJB00437)
CASSETTE IN SUB SW C.B.A (VJB00463)
REC INHIBIT SW C.B.A (VJB00438)
HALL IC
LUMINANCE PROCESS C.B.A (VEP0389A1)
SERVO C.B.A (VEP0293D1)
NOISE REDUCTION C.B.A (VEP0455A1)
LOADING MOTOR & DEW SENSOR C.B.A (VJB00477)
M602
R623
AUDIO VIDEO INPUT & OUTPUT C.B.A (VJB00424)
TV
LINE
S614
S612-2
S612-1
LINE OUT
AUX IN
VIDEO OUT J608
VIDEO IN J607
8P CONNECTOR J614
AUDIO MONITOR J613
H601
H602
H603
POWER SW
S608
POWER TRANS
VOLTAGE SELECTOR
AC 19V
LINE FILTER C.B.A (VEP0175A)
J604
AC IN
SUPPLY PHOTO TR CONNECTION C.B.A VJB00132
TAKEUP PHOTO TR CONNECTION C.B.A VJB00183
Q6302
Q6303
SYSTEM CONTROL II C.B.A (VEP0686A1)
SL604 EJECT
SL603 REW
SL602 FF
SL601 MAIN
PRESSURE SOL. SL605
BRAKE SOL. SL606
R630 100Ω 20W
AUDIO C.B.A (VEP0451B1)
CHROMINANCE PROCESS & SYSTEM CONTROL III & SUB SERVO C.B.A (VEP0858A1)
CAPSTAN MOTOR CONNECTION C.B.A (VJB00171)
H605
H606
M603
SYSTEM CONTROL I C.B.A (VEP0685D1)
OPERATOR C.B.A (VJB0687)
S604
MEMORY COUNTER SW
M601
SUB LOADING MOTOR
AUTO REPEAT REWIND SW C.B.A
S603
TIMER REC PLAY SW C.B.A
S602
VJB00428
AUDIO LIMITER SW C.B.A
S601-1
S601-2
TRACKING.SLOW VR C.B.A
R607
R608
VJB00426
MIC JACK C.B.A (VJB00425)
J601 CH-2
J602 CH-1
AUDIO LEVEL VR C.B.A (VJB00427)
R601
R602
LAMP & METER CONNECTION C.B.A (VJB00428)
LM601
LM602
PL601
PL602
D
E
F
G
H
I
J
K
L
M
N
O

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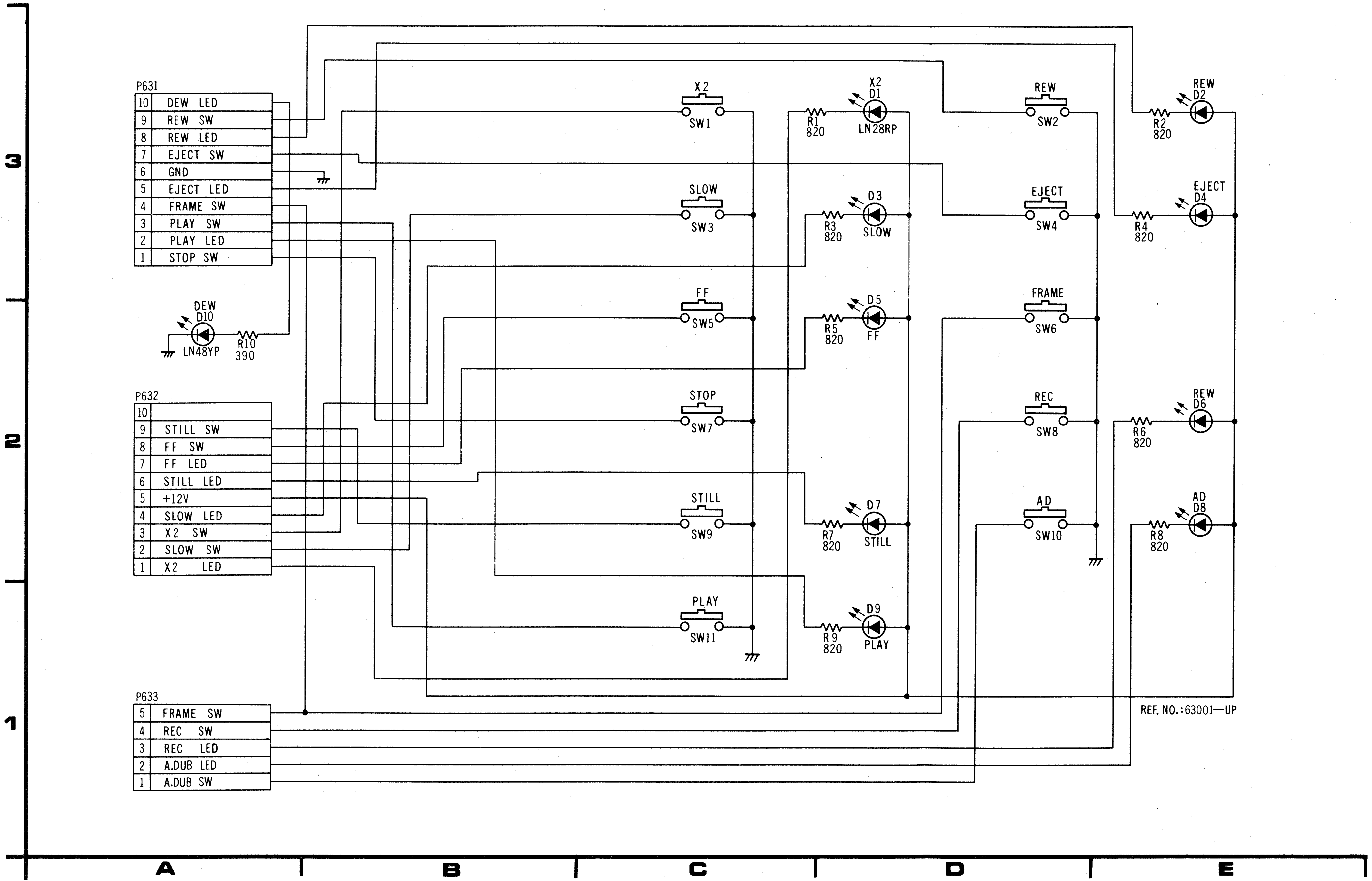
KEY BOARD SW SCHEMATIC DIAGRAM


P631
10 DEW LED
9 REW SW
8 REW LED
7 EJECT SW
6 GND
5 EJECT LED
4 FRAME SW
3 PLAY SW
2 PLAY LED
1 STOP SW
DEW
D10
LN48YP
R10
390
P632
10
9 STILL SW
8 FF SW
7 FF LED
6 STILL LED
5 +12V
4 SLOW LED
3 X2 SW
2 SLOW SW
1 X2 LED
P633
5 FRAME SW
4 REC SW
3 REC LED
2 A.DUB LED
1 A.DUB SW
X2
SW1
SLOW
SW3
FF
SW5
STOP
SW7
STILL
SW9
PLAY
SW11
X2
D1
R1
820
LN28RP
D3
R3
820
SLOW
D5
R5
820
FF
D7
R7
820
STILL
D9
R9
820
PLAY
REW
SW2
EJECT
SW4
FRAME
SW6
REC
SW8
AD
SW10
REW
D2
R2
820
EJECT
D4
R4
820
REW
D6
R6
820
AD
D8
R8
820
REF. NO.:63001—UP
3
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A
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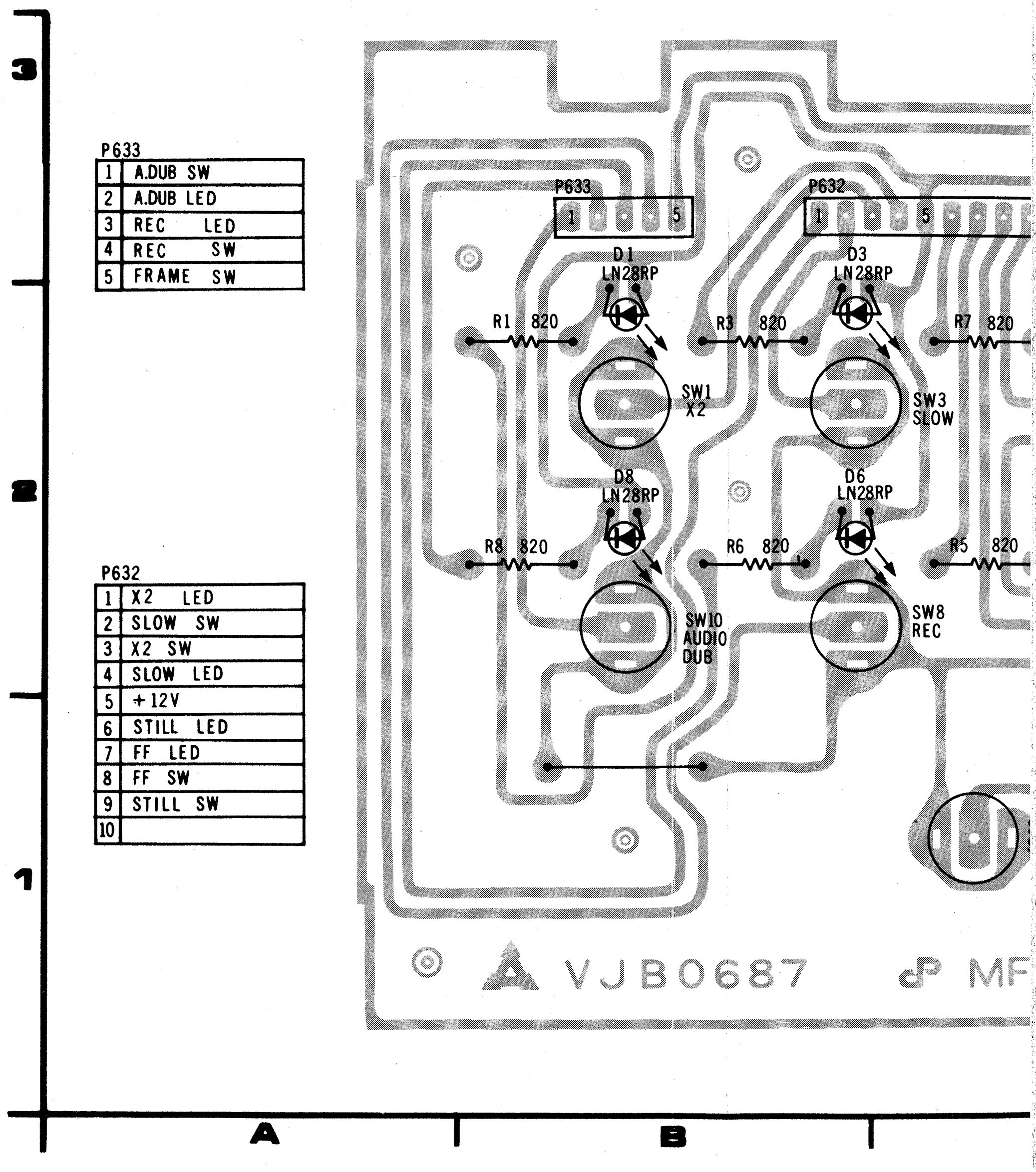
C
D
E

KEY BOARD SW CIRCUIT BOARD (VJB0


P633
1 A.DUB SW
2 A.DUB LED
3 REC LED
4 REC SW
5 FRAME SW
P632
1 X2 LED
2 SLOW SW
3 X2 SW
4 SLOW LED
5 +12V
6 STILL LED
7 FF LED
8 FF SW
9 STILL SW
10
P633
1
5
P632
1
5
D1
LN28RP
D3
LN28RP
R1 820
R3 820
R7 820
SW1
X2
SW3
SLOW
D8
LN28RP
D6
LN28RP
R8 820
R6 820
R5 820
SW10
AUDIO
DUB
SW8
REC
VJB0687
MF
3
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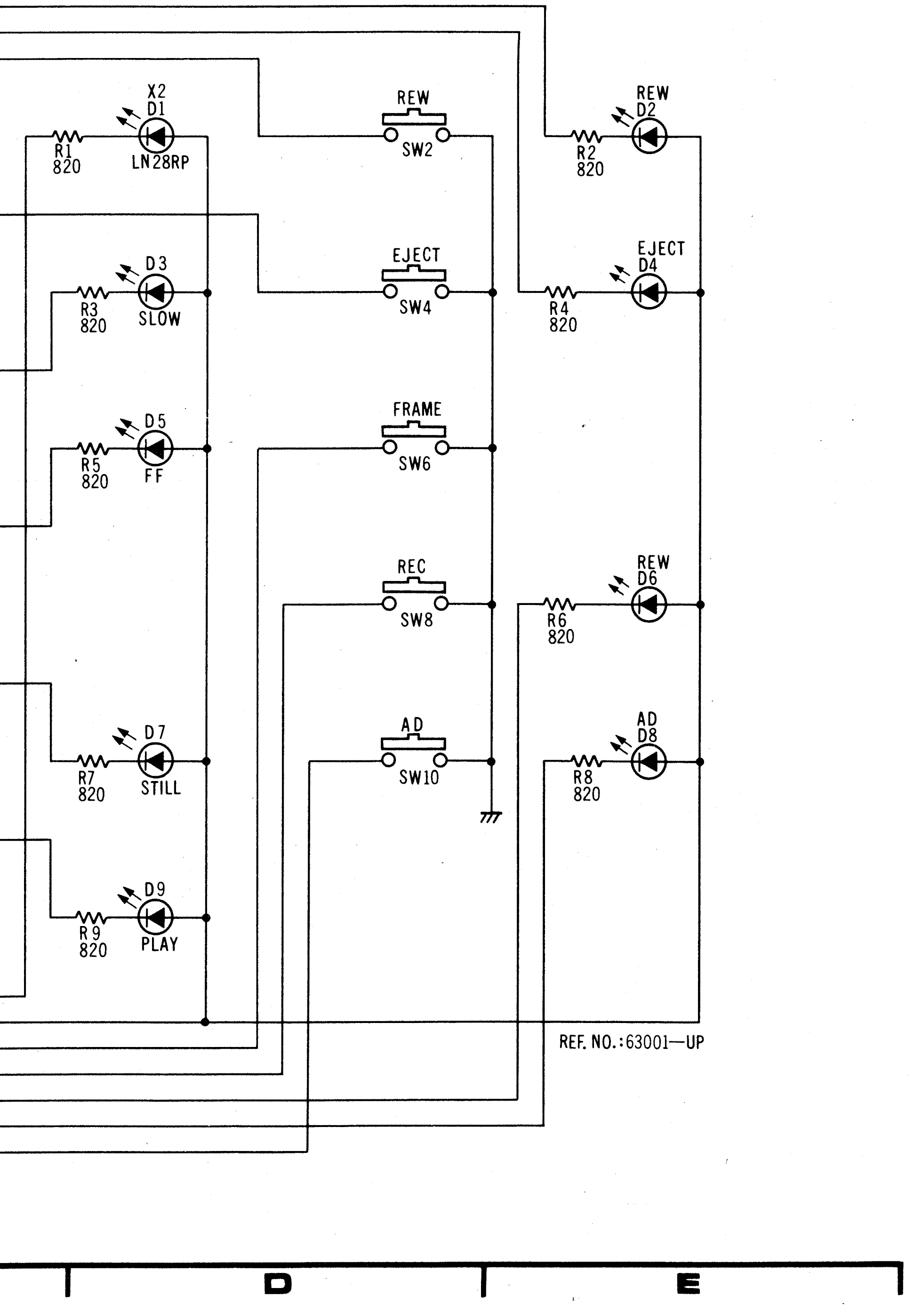
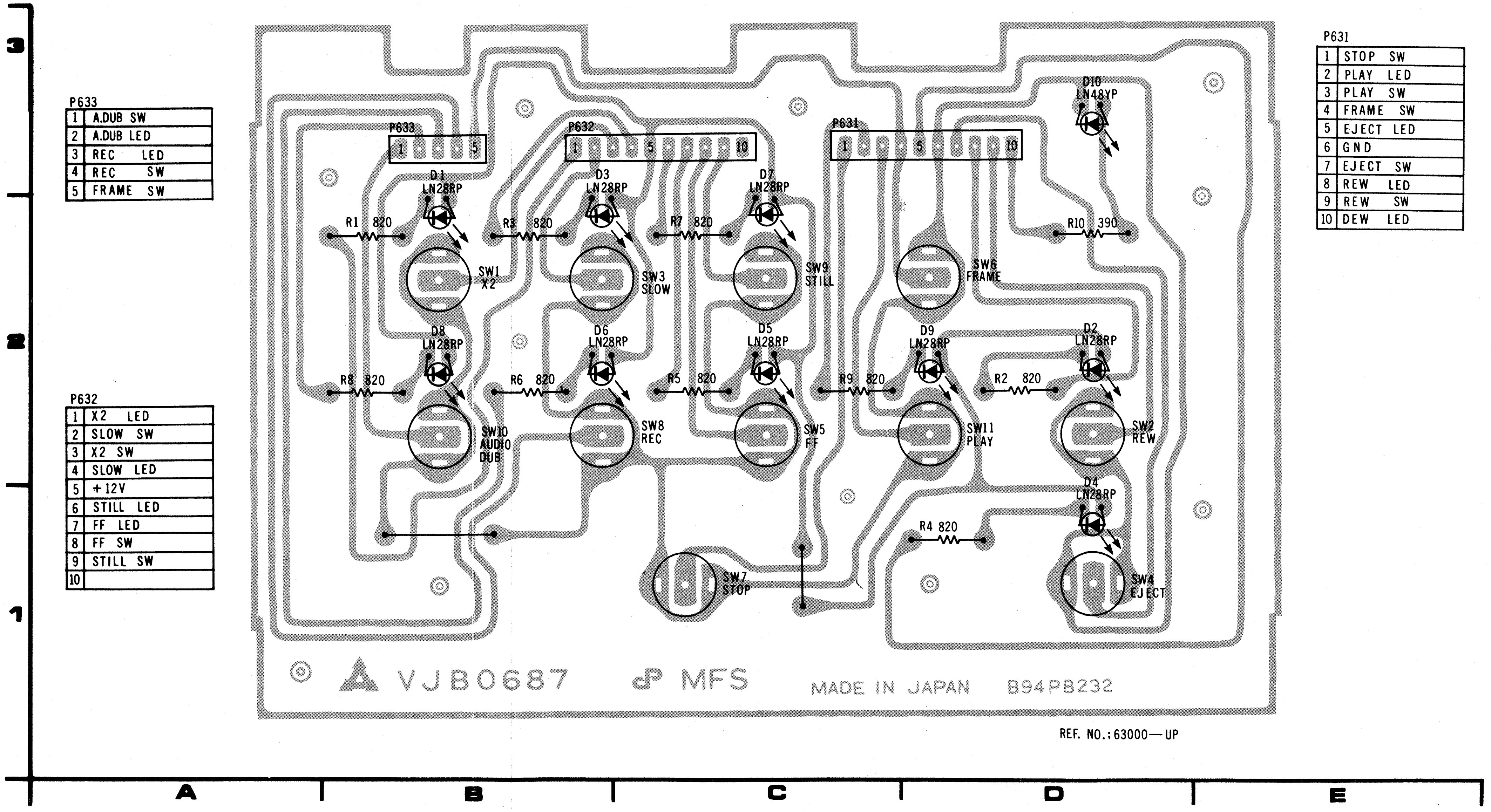
A
B

KEY BOARD SW CIRCUIT BOARD (VJB0687)



X2
D1
R1
820
LN28RP
REW
SW2
REW
D2
R2
820
D3
R3
820
SLOW
EJECT
SW4
EJECT
D4
R4
820
D5
R5
820
FF
FRAME
SW6
REC
SW8
REW
D6
R6
820
D7
R7
820
STILL
AD
SW10
AD
D8
R8
820
D9
R9
820
PLAY
D
E

REF. NO.:63001—UP



3
2
1
A
B
C
D
E
P633
P632
P631
D1
LN28RP
R1 820
SW1
X2
D3
LN28RP
R3 820
SW3
SLOW
D7
LN28RP
R7 820
SW9
STILL
SW6
FRAME
D10
LN48YP
R10 390
D8
LN28RP
R8 820
SW10
AUDIO
DUB
D6
LN28RP
R6 820
SW8
REC
D5
LN28RP
R5 820
SW5
FF
D9
LN28RP
R9 820
SW11
PLAY
D2
LN28RP
R2 820
SW2
REW
D4
LN28RP
R4 820
SW4
EJECT
SW7
STOP
VJB0687
MFS
MADE IN JAPAN
B94PB232

P633

1	A.DUB SW
2	A.DUB LED
3	REC LED
4	REC SW
5	FRAME SW

P632

1	X2 LED
2	SLOW SW
3	X2 SW
4	SLOW LED
5	+12V
6	STILL LED
7	FF LED
8	FF SW
9	STILL SW
10	

P631

1	STOP SW
2	PLAY LED
3	PLAY SW
4	FRAME SW
5	EJECT LED
6	GND
7	EJECT SW
8	REW LED
9	REW SW
10	DEW LED

REF. NO.:63000—UP

ORDER NO. VRD-8003-385

Service Manual

Video Cassette Recorder

Panasonic VHS

NV-8200-E -B -A

Exploded View
Replacement Parts List

SPECIFICATIONS

Power Source: 110/127/220/240 V AC, 50 Hz/60 Hz
Power Consumption: Approx. 45 watts
Television System: CCIR: 625 lines, 50 fields
PAL colour signal
Video Recording System: 2 rotary heads, helical scanning system
Luminance: FM azimuth recording
Colour signal: converted subcarrier phase shift recording
Audio Track: 2 tracks
Tape Format: Tape width 12.7 mm, high density tape
Tape Speed: 23.39 mm/s (Normal)
Record/Playback Time: 180 min. with NV-E180
FF/REW Time: Less than 4.5 min. with NV-E180
Heads: Video: 2 rotary heads
Audio/Control: 1 stationary head
Erase: 1 full track erase
1 audio track erase for audio dubbing
Input Level: Video: TV Monitor connector (8 pins)
1.0 Vp-p, 75Ω unbalanced
VIDEO IN connector (BNC)
1.0 Vp-p, 75Ω unbalanced
Audio: TV Monitor connector (8 pins)
−20 dB, 100 kΩ unbalanced
MIC IN jack × 2
−70 dB, 600Ω unbalanced
LINE IN jack (RCA) × 2
−20 dB, 100 kΩ unbalanced
Output Level: Video: TV Monitor connector (8 pins)
1.0 Vp-p, 75Ω unbalanced
VIDEO OUT connector (BNC)
1.0 Vp-p, 75Ω unbalanced
Audio: TV Monitor connector (8 pins)
0 dB, 5 kΩ unbalanced
LINE OUT jack (RCA) × 2
−6 dB, 600Ω unbalanced
HEADPHONE jack
−32 dB, 8Ω unbalanced

Video Horizontal Resolution: Colour: more than 240 lines
(on monoscope test pattern) B/W: more than 300 lines
Audio Frequency Response: 80 ~ 10,000 Hz
Signal-to-Noise Ratio: Video: better than 43 dB
Audio: better than 45 dB
Operating Temperature: 5°C ~ 40°C
Weight: 15.5 kg
Dimensions: 382(W) × 382(D) × 156(H) mm
Accessories Supplied: 1 pc. Video cassette tape, NV-E120
1 pc. 8 pin cable, VJA54S
1 pc. Dust cover, VYC0041
1 pc. Fan bag, VQF0523
1 pc. Protect cover, VYF0154
Optional Accessories: Video cassette tape:
NV-E180 Approx. 258 m, 180 min.
NV-E120 Approx. 174 m, 120 min.
NV-E60 Approx. 88 m, 60 min.
Carrying case, NV-H80-E
Remote controller, NV-A810-E
Approx. 3 m
Auto search controller, NV-A800-E
Approx. 2 m
Interface adaptor, NV-A820-E
VTR-Monitor connection cable

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic®

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

(112) NV 8200

CONTENTS

SPECIFICATIONS .... Cover

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3. Chassis Parts Section 4-5
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6. Chassis Frame Section-(2) 4-8
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8. Paking Parts Section 4-10

REPLACEMENT PARTS LIST 1-11

- Mechanical Replacement Parts List 4-11
- Electrical Replacement Parts List 4-15

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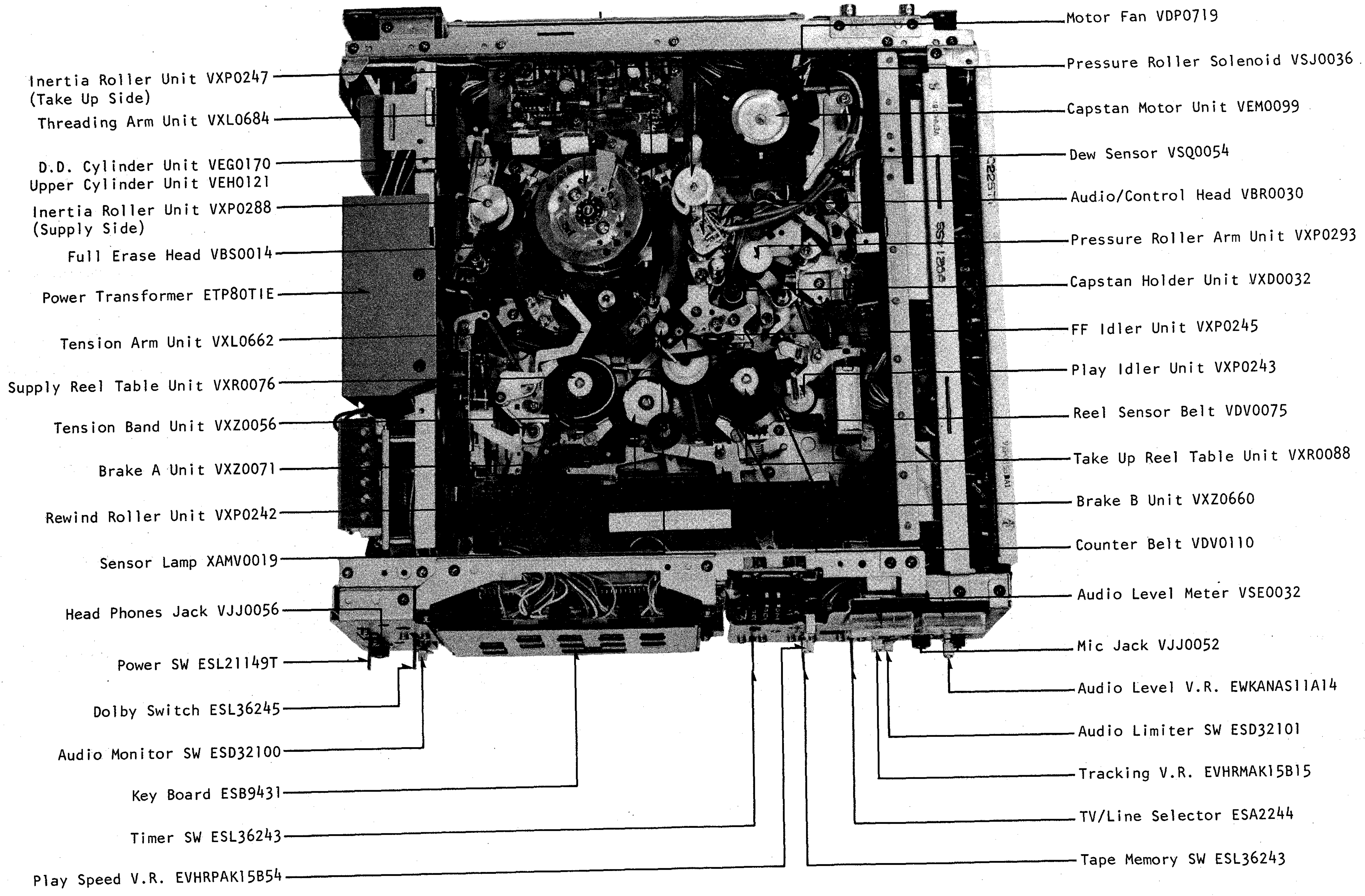
INNER PARTS LOCATION
TOP VIEW


Inertia Roller Unit VXP0247 (Take Up Side)
Threading Arm Unit VXL0684
D.D. Cylinder Unit VEG0170
Upper Cylinder Unit VEH0121
Inertia Roller Unit VXP0288 (Supply Side)
Full Erase Head VBS0014
Power Transformer ETP80TIE
Tension Arm Unit VXL0662
Supply Reel Table Unit VXR0076
Tension Band Unit VXZ0056
Brake A Unit VXZ0071
Rewind Roller Unit VXP0242
Sensor Lamp XAMV0019
Head Phones Jack VJJ0056
Power SW ESL21149T
Dolby Switch ESL36245
Audio Monitor SW ESD32100
Key Board ESB9431
Timer SW ESL36243
Play Speed V.R. EVHRPAK15B54
Motor Fan VDP0719
Pressure Roller Solenoid VSJ0036
Capstan Motor Unit VEM0099
Dew Sensor VSQ0054
Audio/Control Head VBR0030
Pressure Roller Arm Unit VXP0293
Capstan Holder Unit VXD0032
FF Idler Unit VXP0245
Play Idler Unit VXP0243
Reel Sensor Belt VDV0075
Take Up Reel Table Unit VXR0088
Brake B Unit VXZ0660
Counter Belt VDV0110
Audio Level Meter VSE0032
Mic Jack VJJ0052
Audio Level V.R. EWKANAS11A14
Audio Limiter SW ESD32101
Tracking V.R. EVHRMAK15B15
TV/Line Selector ESA2244
Tape Memory SW ESL36243

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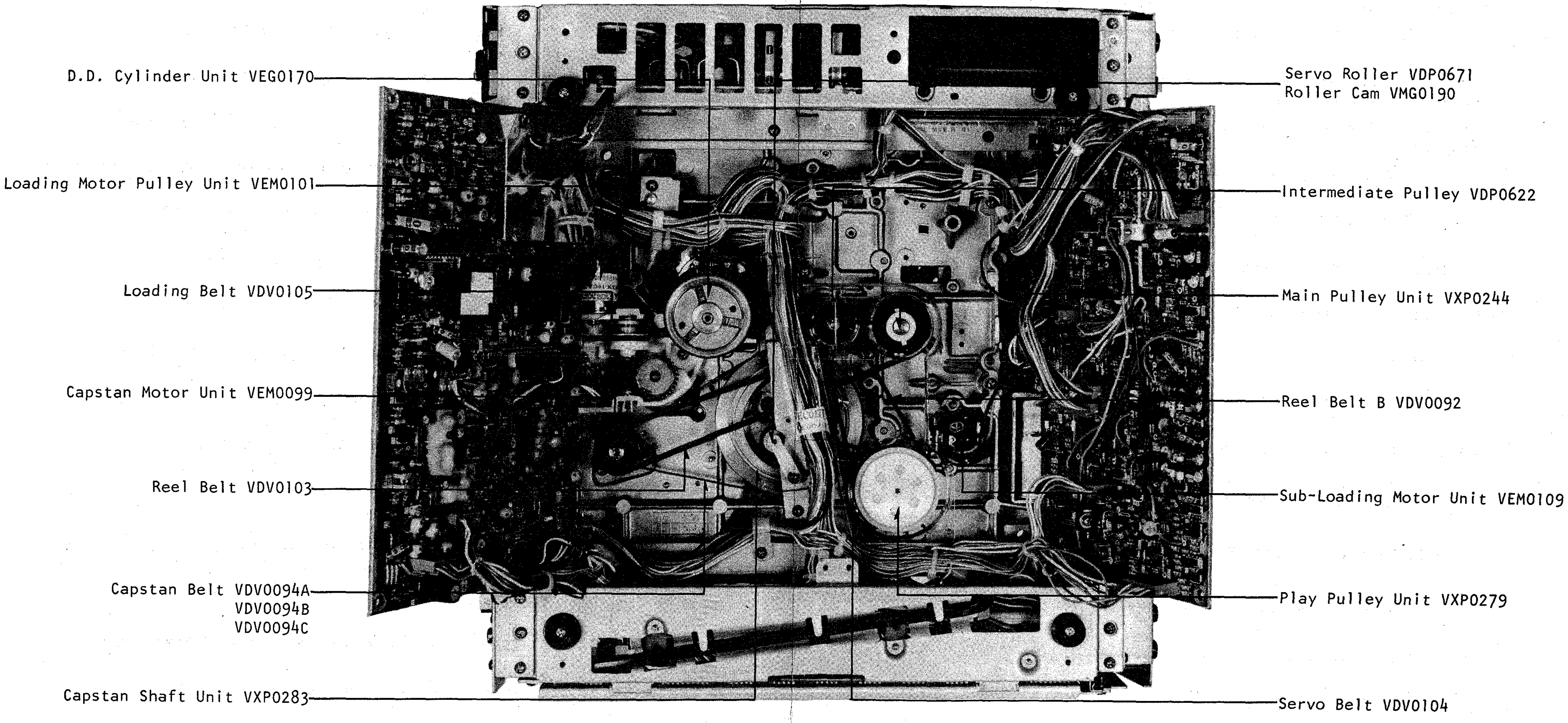
BOTTOM VIEW


D.D. Cylinder Unit VEG0170
Loading Motor Pulley Unit VEM0101
Loading Belt VDV0105
Capstan Motor Unit VEM0099
Reel Belt VDV0103
Capstan Belt VDV0094A
VDV0094B
VDV0094C
Capstan Shaft Unit VXP0283
Servo Roller VDP0671
Roller Cam VMG0190
Intermediate Pulley VDP0622
Main Pulley Unit VXP0244
Reel Belt B VDV0092
Sub-Loading Motor Unit VEM0109
Play Pulley Unit VXP0279
Servo Belt VDV0104

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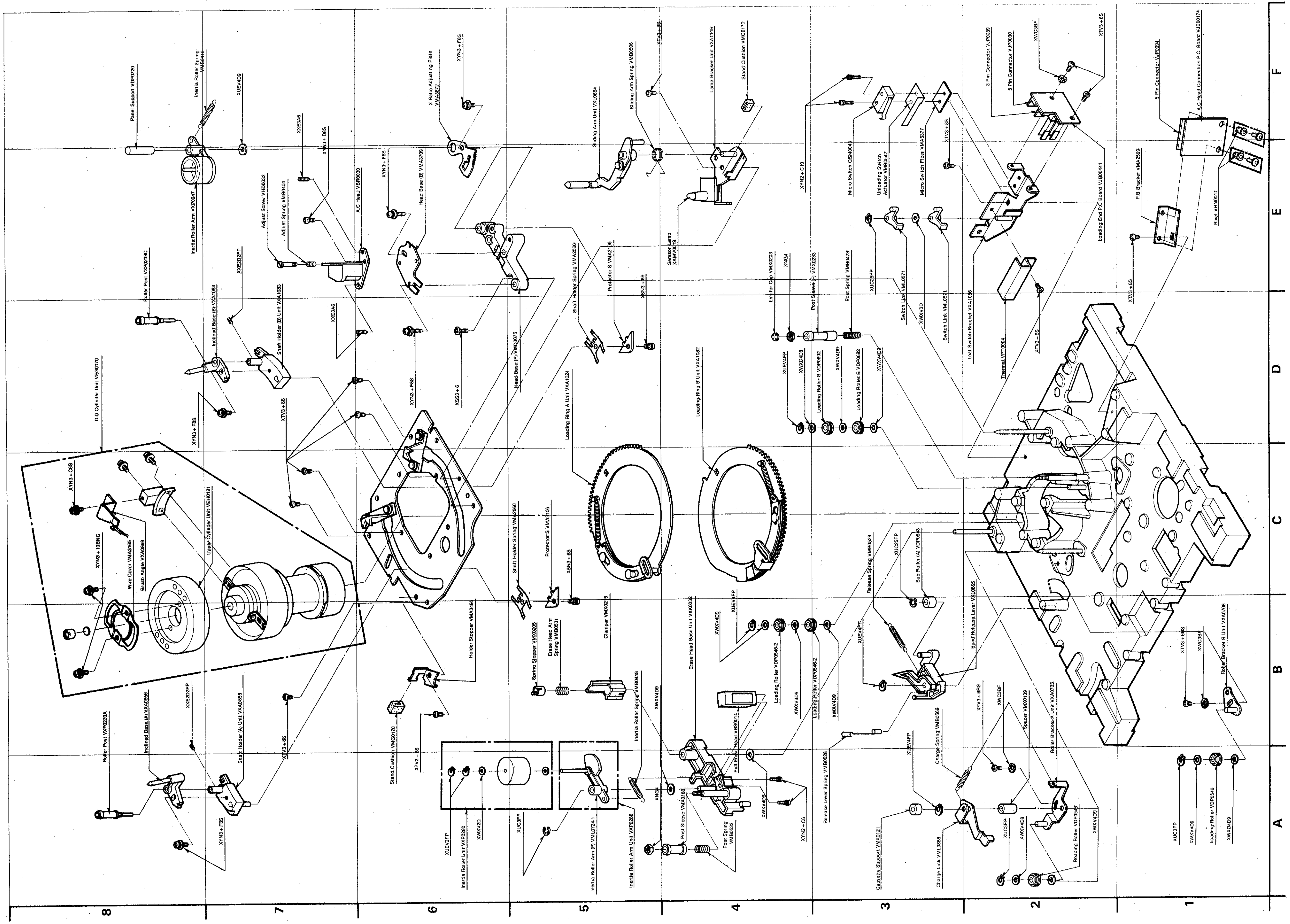
EXPLODED VIEW ❶ *Transport Section*


Panel Support VDP0720
Inertia Roller Spring VMB0418
XUEV4D9
Inertia Roller Arm VXP0247
XXE3A6
XYN3 + D8S
Adjust Screw VHD0032
Adjust Spring VMB0404
A.C Head VBR0030
XYN3 + F8S
Head Base (B) VMA3709
X Ratio Adjusting Plate VMA3872
XYN3 + F8S
Roller Post VXP0239C
Inclined Base (B) VXA1084
XXE2D2FP
Shaft Holder (B) Unit VXA1083
XXE3A6
XYN3 + F8S
XSS3 + 6
Head Base (F) VMD0075
XYN3 + F8S
XTV3 + 8S
D.D Cylinder Unit VEG0170
XYN3 + C6S
XYN3 + 10BNC
Wire Cover VMA3165
Brush Angle VXA0869
Upper Cylinder Unit VEH0121
Sliding Arm Unit VXL0684
Sliding Arm Spring VMB0596
XTV3 + 8S
Lamp Bracket Unit VXA1116
Stand Cushion VMG0170
Sensor Lamp XAMV0019
Shaft Holder Spring VMA2560
Protector S VMA3106
XSN3 + 6S
Loading Ring A Unit VXA1024
Loading Ring B Unit VXA1082
XYN2 + C10
Micro Switch QSM0043
Unloading Switch Actuator VMB0542
Micro Switch Fiber VMA5377
XTV3 + 8S
Limiter Cap VMX0203
XNG4
Post Sleeve (F) VMX0233
Post Spring VMB0478
XUC25FP
Switch Link VML0571
XWXV3D
Switch Link VML0571
XUEV4FP
XWXD4D9
Loading Roller B VDP0692
XWXV4D9
Loading Roller B VDP0692
XWXV4D9
3 Pin Connector VJP0089
5 Pin Connector VJP0090
XWC3BF
XTV3 + 6S
Leaf Switch Bracket VXA1086
Thermal VRT0004
XTV3 + 6S
Loading End P.C Board VJB00441
5 Pin Connector VJP0094
A.C Head Connection P.C. Board VJB00174
P.B Bracket VMA2599
Rivet VHN0011
XTV3 + 8S
Roller Post VXP0239A
Inclined Base (A) VXA0856
XXE2D2FP
Shaft Holder (A) Unit VXA0855
XYN3 + F8S
XTV3 + 8S
Holder Stopper VMA3495
Stand Cushion VMG0170
XTV3 + 6S
XUEV2FP
Inertia Roller Unit VXP0280
XWXV2D
XUC3FP
Shaft Holder Spring VMA2560
Protector S VMA3106
XSN3 + 6S
Spring Stopper VMX0205
Erase Head Arm Spring VMB0531
Clamper VMX0215
Inertia Roller Arm (P) VML0724-1
Inertia Roller Arm Unit VXP0288
Inertia Roller Spring VMB0418
XWXV4D9
XNG4
Post Sleeve VMX0186
Post Spring VMB0532
Erase Head Base Unit VXK0332
Full Erase Head VBS0014
XWXV4D9
XYN2 + C6
XWXV4D9
XUEV4FP
Loading Roller VDP0546-2
XWXV4D9
Loading Roller VDP0546-2
XWXV4D9
Release Lever Spring VMB0528
Release Spring VMB0529
XUEV4FP
XUC25FP
Sub Roller (A) VDP0543
Band Release Lever VXL0665
Cassette Support VMX0121
XUEV4FP
Charge Spring VMB0569
Charge Link VML0888
XTV3 + 6RS
XWC3BF
Spacer VMX0139
Roller Bracket A Unit VXA0705
XUC3FP
XWXV4D9
Roading Roller VDP0546
XWXV4D9
XTV3 + 6RS
XWC3BF
Roller Bracket B Unit VXA0706
XUC3FP
XWXV4D9
Loading Roller VDP0546
XWXD4D9
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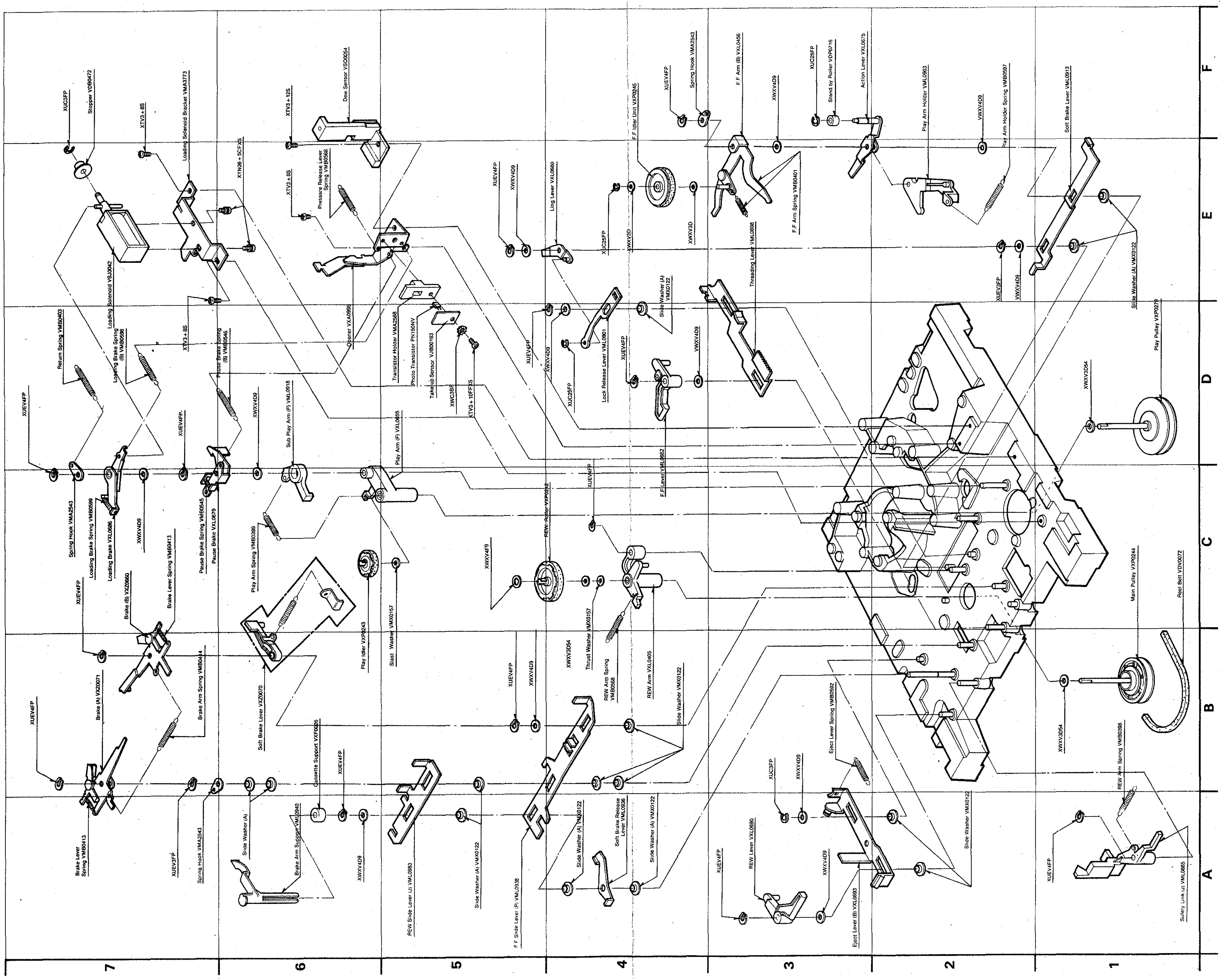
❷ Moving Mechanism Section



F
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C
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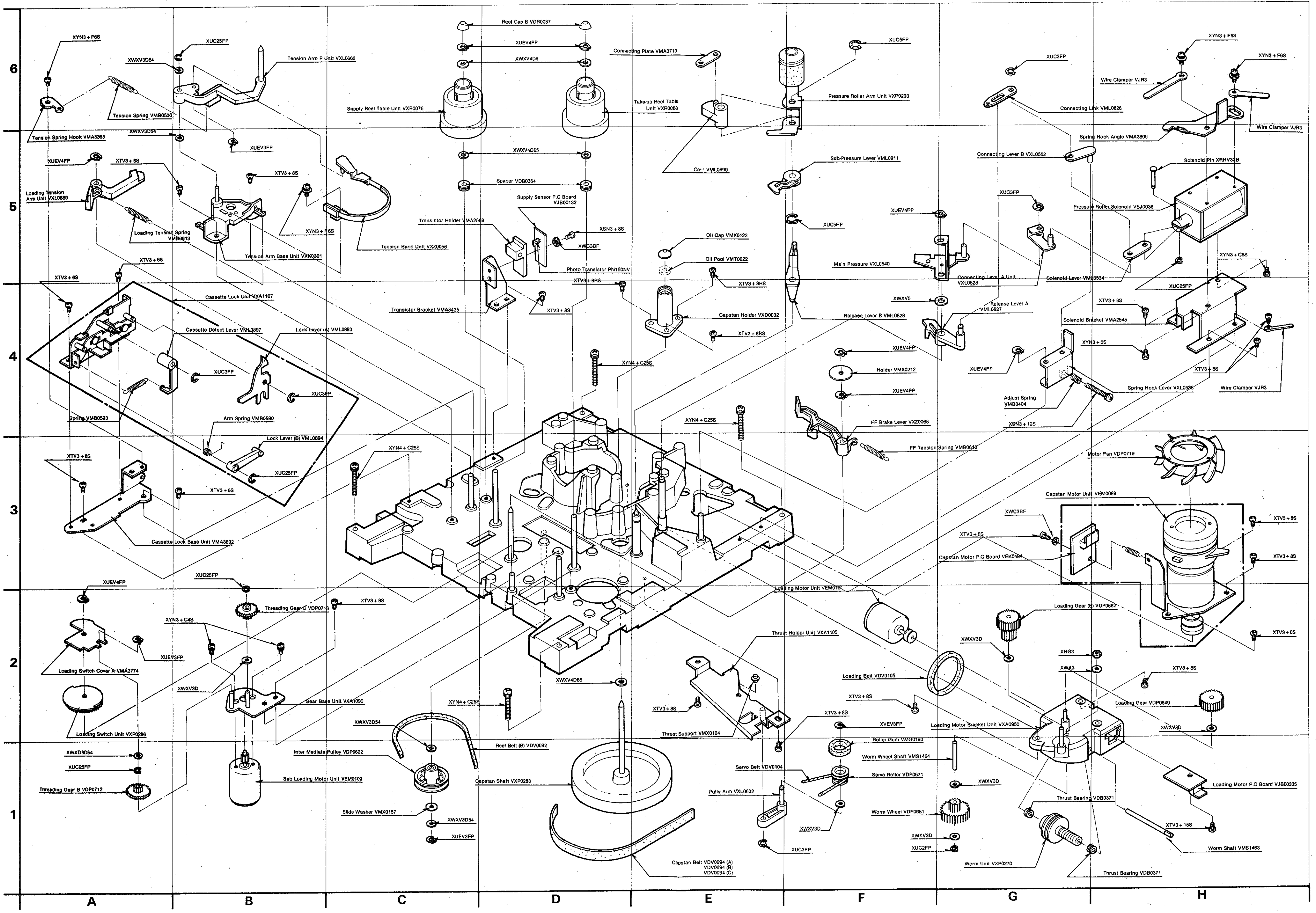
1
XUC3FP
Stopper VDK0472
XTV3+8S
Loading Solenoid Bracket VMA3773
XYN26+6CFZS
Loading Solenoid VSJ0042
Return Spring VMB0403
Loading Brake Spring (B) VMB0638
XTV3+8S
Pause Brake Spring (B) VMB0546
XUEV4FP
XUEV4FP
XWXV4D9
Spring Hook VMA2543
Loading Brake Spring VMB0599
Loading Brake VXL0686
XWXV4D9
Brake Lever Spring VMB0413
Pause Brake Spring VMB0545
Pause Brake VXL0679
XUEV4FP
Brake (B) VXZ0660
Brake (A) VXZ0071
Brake Arm Spring VMB0414
XUEV4FP
Brake Lever Spring VMB0413
XUEV3FP
Spring Hook VMA2543
Slide Washer (A)
Brake Arm Support VML0940
XTV3+12S
Dew Sensor VSD0054
XTV3+8S
Pressure Release Lever Spring VMB0568
Opener VXA0999
Sub Play Arm (F) VML0918
Play Arm Spring VMB0399
Soft Brake Lever VXZ0070
Cassette Support VXF0026
XUEV4FP
XWXV4D9
Play Idler VXP0243
Slast Washer VMX0157
Play Arm (F) VXL0665
Transistor Holder VMA2568
Photo Transistor PN150NV
Take-up Sensor VJB00183
XWC3BF
XTV3+10FFZS
REW Slide Lever (J) VML0883
Slide Washer (A) VMX0122
XWXV4F9
XUEV4FP
XWXV4D9
XWXV3054
Thrust Washer VMX0157
REW Arm Spring VMB0558
REW Arm VXL0405
Slide Washer VMX0122
REW Roller VXP0252
F.F Slide Lever (P) VML0938
Slide Washer (A) VMX0122
Soft Brake Release Lever VML0936
Slide Washer (A) VMX0122
XUEV4FP
XWXV4D9
Ling Lever VXL0680
XUC25FP
XWXV3D
F.F Idler Unit VXP0245
XUEV4FP
Spring Hook VMA2543
Slide Washer (A) VMX0122
XUEV4FP
XWXV4D9
XUC25FP
Lock Release Lever VML0901
XUEV4FP
VWXV4D9
F.F Lever VML0882
XUEV4FP
F.F Arm (B) VXL0456
XWXV4D9
F.F Arm Spring VMB0401
XWXV3D
Threading Lever VML0898
XUC25FP
Stand by Roller VDP0716
Action Lever VXL0675
Eject Lever Spring VMB0592
XUC3FP
XWXV4D9
XUEV4FP
REW Lever VXL0690
XWXV4D9
Eject Lever (B) VXL0693
Slide Washer VMX0122
Play Arm Holder VML0903
VWXV4D9
Play Arm Holder Spring VMB0597
XUEV2FP
VWXV4D9
XWXV3D54
Main Pulley VXP0244
Soft Brake Lever VML0913
Slide Washer (A) VMX0122
Play Pulley VXP0279
Reel Belt VDV0072
XWXV3054
REW Arm Spring VMB0398
XUEV4FP
Safety Link (J) VML0685

❸ Chassis Parts Section

NV8200 (117)


XYN3+F6S
XUC25FP
XWXV3D54
Tension Arm P Unit VXL0662
Tension Spring VMB0530
Tension Spring Hook VMA3365
XWXV3D54
XUEV3FP
XUEV4FP
XTV3+8S
XTV3+8S
Loading Tension Arm Unit VXL0689
Loading Tension Spring VMB0613
XYN3+F6S
Tension Arm Base Unit VXK0301
Tension Band Unit VXZ0056
XTV3+6S
XTV3+6S
Cassette Lock Unit VXA1107
Cassette Detect Lever VML0897
Lock Lever (A) VML0893
XUC3FP
XUC3FP
Spring VMB0593
Arm Spring VMB0590
Lock Lever (B) VML0894
XUC25FP
XTV3+6S
XTV3+6S
Cassette Lock Base Unit VMA3692
XYN4+C25S
Reel Cap B VDR0067
XUEV4FP
XWXV4D9
Supply Reel Table Unit VXR0076
Take-up Reel Table Unit VXR0068
XWXV4D65
Spacer VDB0364
Supply Sensor P.C Board VJB00132
Transistor Holder VMA2568
XSN3+8S
XWC3BF
Photo Transistor PN150NV
XTV3+8RS
Transistor Bracket VMA3435
XTV3+8S
XYN4+C25S
XYN4+C25S
Connecting Plate VMA3710
Cam VML0899
Oil Cap VMX0123
Oil Pool VMT0022
XTV3+8RS
Capstan Holder VXD0032
XTV3+8RS
XUC5FP
Pressure Roller Arm Unit VXP0293
Sub-Pressure Lever VML0911
XUC5FP
XUEV4FP
Main Pressure VXL0540
XWXV5
Release Lever B VML0828
XUEV4FP
Holder VMX0212
XUEV4FP
FF Brake Lever VXZ0068
FF Tension Spring VMB0612
XUC3FP
Connecting Link VML0826
Connecting Lever B VXL0552
XUC3FP
Connecting Lever A Unit VXL0628
Release Lever A VML0827
XUEV4FP
Adjust Spring VMB0404
XSN3+12S
XYN3+F6S
XYN3+F6S
Wire Clamper VJR3
Wire Clamper VJR3
Spring Hook Angle VMA3809
Solenoid Pin XRHV3XB
Pressure Roller Solenoid VSJ0036
XYN3+C6S
Solenoid Lever VML0534
XUC25FP
XTV3+8S
Solenoid Bracket VMA2545
XYN3+6S
XTV3+8S
Spring Hook Lever VXL0538
Wire Clamper VJR3
Motor Fan VDP0719
Capstan Motor Unit VEM0099
XWC3BF
XTV3+6S
Capstan Motor P.C Board VEK0494
XTV3+8S
XTV3+8S
XTV3+8S
XUEV4FP
Loading Switch Cover A VMA3774
XUEV3FP
Loading Switch Unit VXP0296
XWXD3D54
XUC25FP
Threading Gear B VDP0712
XUC25FP
Threading Gear C VDP0713
XTV3+8S
XYN3+C4S
XWXV3D
Gear Base Unit VXA1090
Sub Loading Motor Unit VEM0109
XWXV3D54
Inter Mediate Pulley VDP0622
Slide Washer VMX0157
XWXV3D54
XUEV3FP
Reel Belt (B) VDV0092
XYN4+C25S
XWXV4D65
Capstan Shaft VXP0283
Capstan Belt VDV0094 (A)
VDV0094 (B)
VDV0094 (C)
Loading Motor Unit VEM0161
Thrust Holder Unit VXA1105
XTV3+8S
Thrust Support VMX0124
Loading Belt VDV0105
XTV3+8S
XTV3+8S
XVEV3FP
Roller Gum VMG0190
Worm Wheel Shaft VMS1464
Servo Belt VDV0104
Servo Roller VDP0671
Pully Arm VXL0632
XWXV3D
XUC3FP
Worm Wheel VDP0681
XWXV3D
XWXV3D
XUC2FP
Worm Unit VXP0270
Loading Gear (E) VDP0682
XWXV3D
XNG3
XWA3
XTV3+8S
Loading Gear VDP0549
Loading Motor Bracket Unit VXA0950
XWXV3D
Loading Motor P.C Board VJB00335
Thrust Bearing VDB0371
XTV3+15S
Worm Shaft VMS1463
Thrust Bearing VDB0371
6
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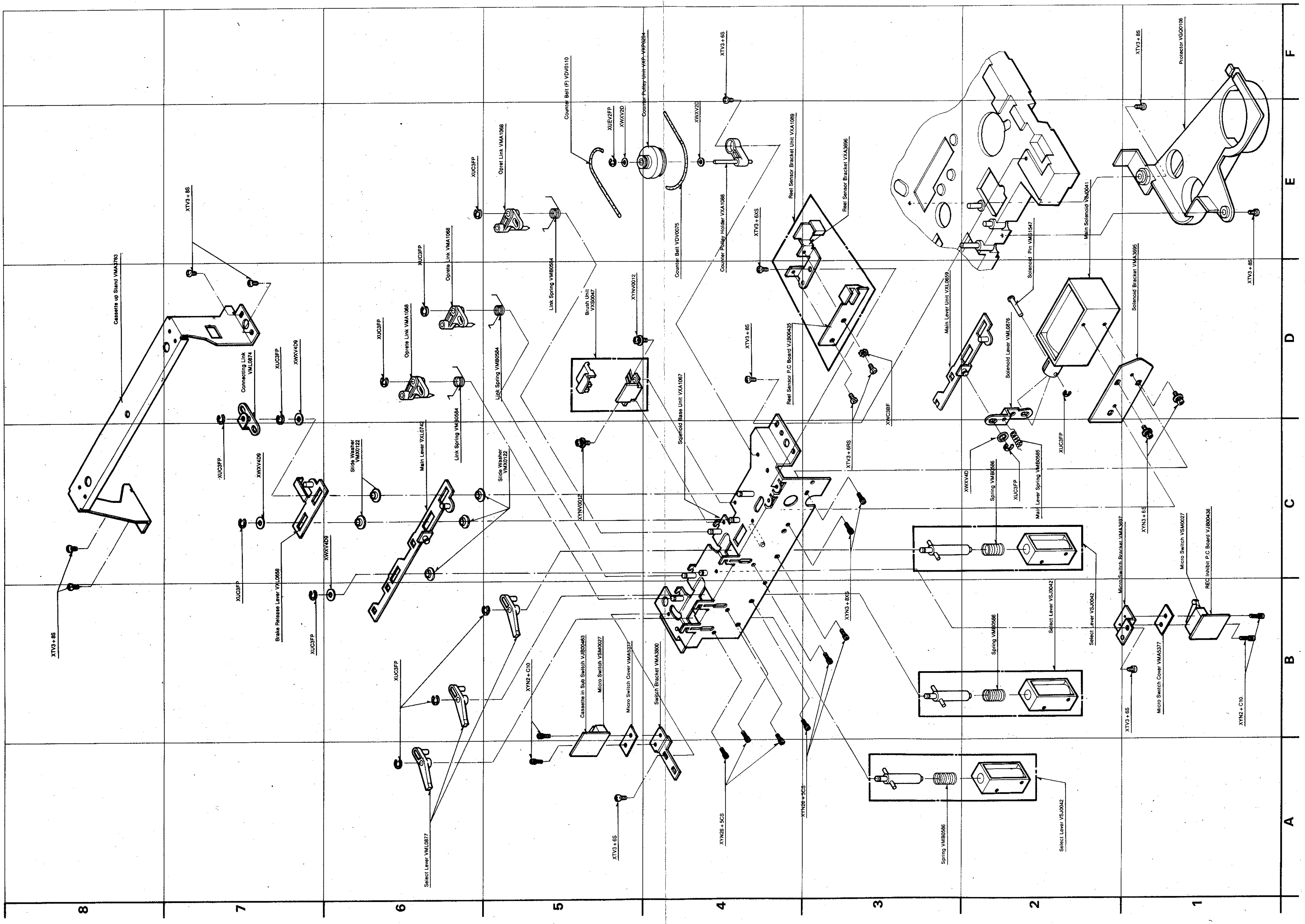
(118) NV 8200

4 Operating Section


F
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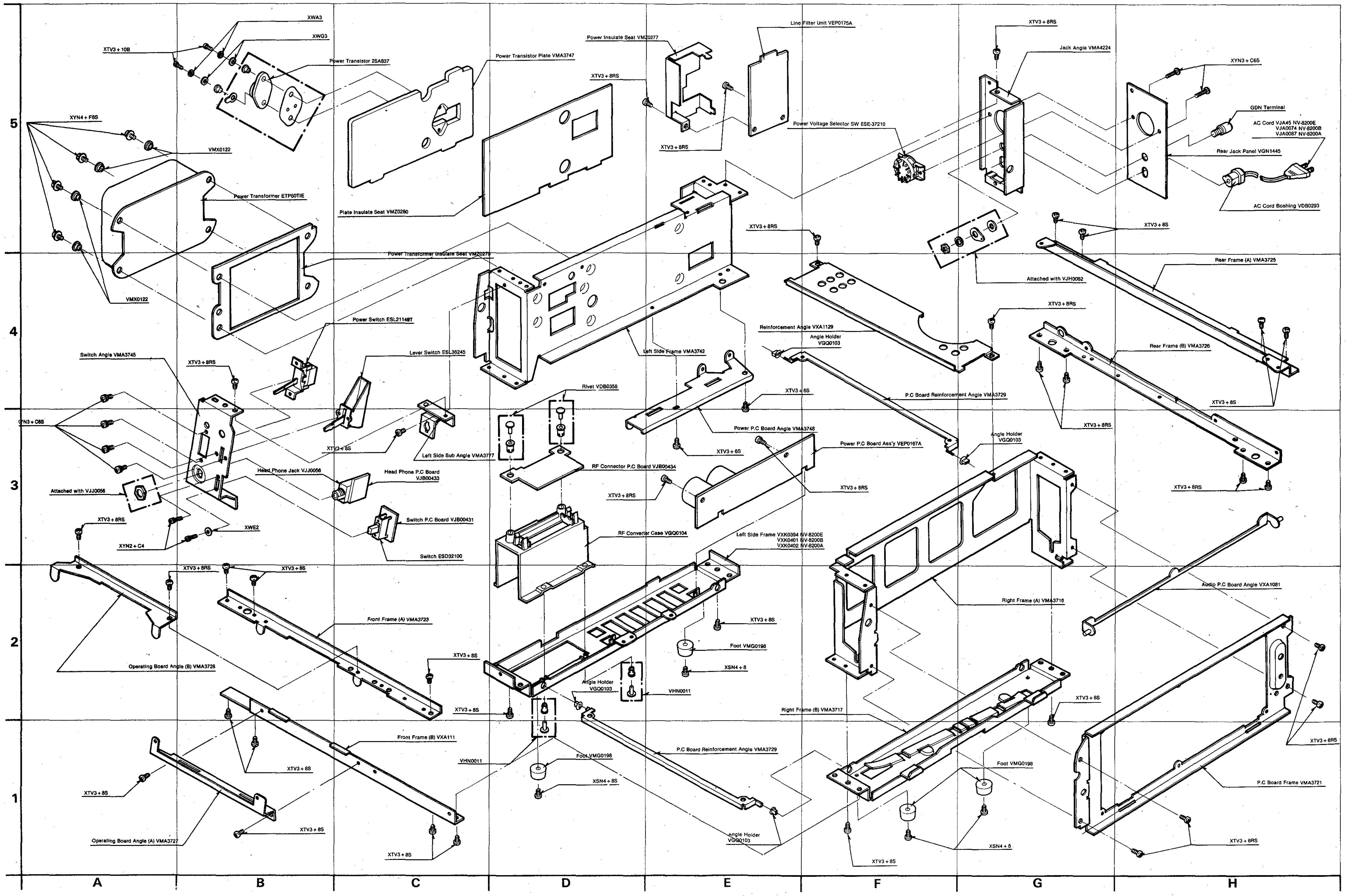
1
Cassette up Stand VMA3783
XTV3+8S
Connecting Link VML0874
XUC3FP
XWXV4D9
Brake Release Lever VML0688
Slide Washer VMX0122
Main Lever VXL0742
Link Spring VMB0584
Oprete Link VMA1068
Opret Link VMA1068
Counter Belt (F) VDV0110
XUEV2FP
XWXV2D
Counter Pulley Unit VXP0294
Brush Unit VXS0047
XYNV0012
Counter Belt VDV0075
Counter Pulley Holder VXA1066
XTV3+6S
XTV3+6XS
Reel Sensor Bracket Unit VXA1069
Reel Sensor Bracket VXA3696
Reel Sensor P.C Board VJB00435
XWC3BF
XTV3+6RS
Solenoid Base Unit VXA1067
Main Lever Unit VXL0659
Solenoid Lever VML0876
Solenoid Pin VMS1547
Main Solenoid VSJ0041
Solenoid Bracket VMA3695
Protector VGQ0106
XWXV4D
Spring VMB0586
Main Lever Spring VMB0585
XYN3+8XS
Select Lever VSJ0042
Micro Switch Bracket VMA3697
XYN3+6S
Micro Switch VSM0027
REC Inhibit P.C Board VJB00438
Micro Switch Cover VMA5377
XYN2+C10
Cassette in Sub Switch VJB00463
Micro Switch Cover VMA5322
Switch Bracket VMA3800
XYN26+5CS
Select Lever VML0877

(119) NV8200

❺ *Chassis Frame Section-(1)*


XWA3
XWG3
XTV3+10B
Power Transistor 2SA837
Power Transistor Plate VMA3747
Power Insulate Seat VMZ0277
Line Filter Unit VEP0175A
XTV3+8RS
Jack Angle VMA4224
XYN3+C6S
XTV3+8RS
XTV3+8RS
Power Voltage Selector SW ESE-37210
GDN Terminal
AC Cord VJA45 NV-8200E
VJA0074 NV-8200B
VJA0087 NV-8200A
Rear Jack Panel VGN1445
AC Cord Boshing VDB0293
XYN4+F8S
VMX0122
Power Transformer ETP80TIE
Plate Insulate Seat VMZ0280
Power Transformer Insulate Seat VMZ0279
XTV3+8RS
XTV3+8S
Rear Frame (A) VMA3725
Attached with VJH0082
XTV3+8RS
VMX0122
Power Switch ESL2114BT
Reinforcement Angle VXA1129
Angle Holder
VGQ0103
Rear Frame (B) VMA3726
Switch Angle VMA3745
XTV3+8RS
Lever Switch ESL36245
Left Side Frame VMA3742
Rivet VDB0358
XTV3+6S
P.C Board Reinforcement Angle VMA3729
XTV3+8S
XYN3+C6S
XTV3+8S
Left Side Sub Angle VMA3777
Power P.C Board Angle VMA3748
XTV3+8RS
Angle Holder
VGQ0103
XTV3+6S
Power P.C Board Ass'y VEP0167A
Head Phone Jack VJJ0056
Head Phone P.C Board
VJB00433
RF Connector P.C Board VJB00434
XTV3+8RS
Attached with VJJ0056
XTV3+8RS
XTV3+8RS
Switch P.C Board VJB00431
XWE2
RF Converter Case VGQ0104
Left Side Frame VXK0394 NV-8200E
VXK0401 NV-8200B
VXK0402 NV-8200A
XYN2+C4
Switch ESD32100
XTV3+8RS
XTV3+8S
Audio P.C Board Angle VXA1081
Right Frame (A) VMA3716
Front Frame (A) VMA3723
XTV3+8S
Foot VMG0198
XSN4+8
XTV3+8S
Operating Board Angle (B) VMA3728
Angle Holder
VGQ0103
VHN0011
XTV3+8S
Right Frame (B) VMA3717
XTV3+8S
Front Frame (B) VXA111
XTV3+8RS
XTV3+8S
P.C Board Reinforcement Angle VMA3729
VHN0011
Foot VMG0198
Foot VMG0198
XSN4+8S
P.C Board Frame VMA3721
XTV3+8S
XTV3+8S
Angle Holder
VGQ0103
XSN4+8
XTV3+8RS
Operating Board Angle (A) VMA3727
XTV3+8S
XTV3+8S
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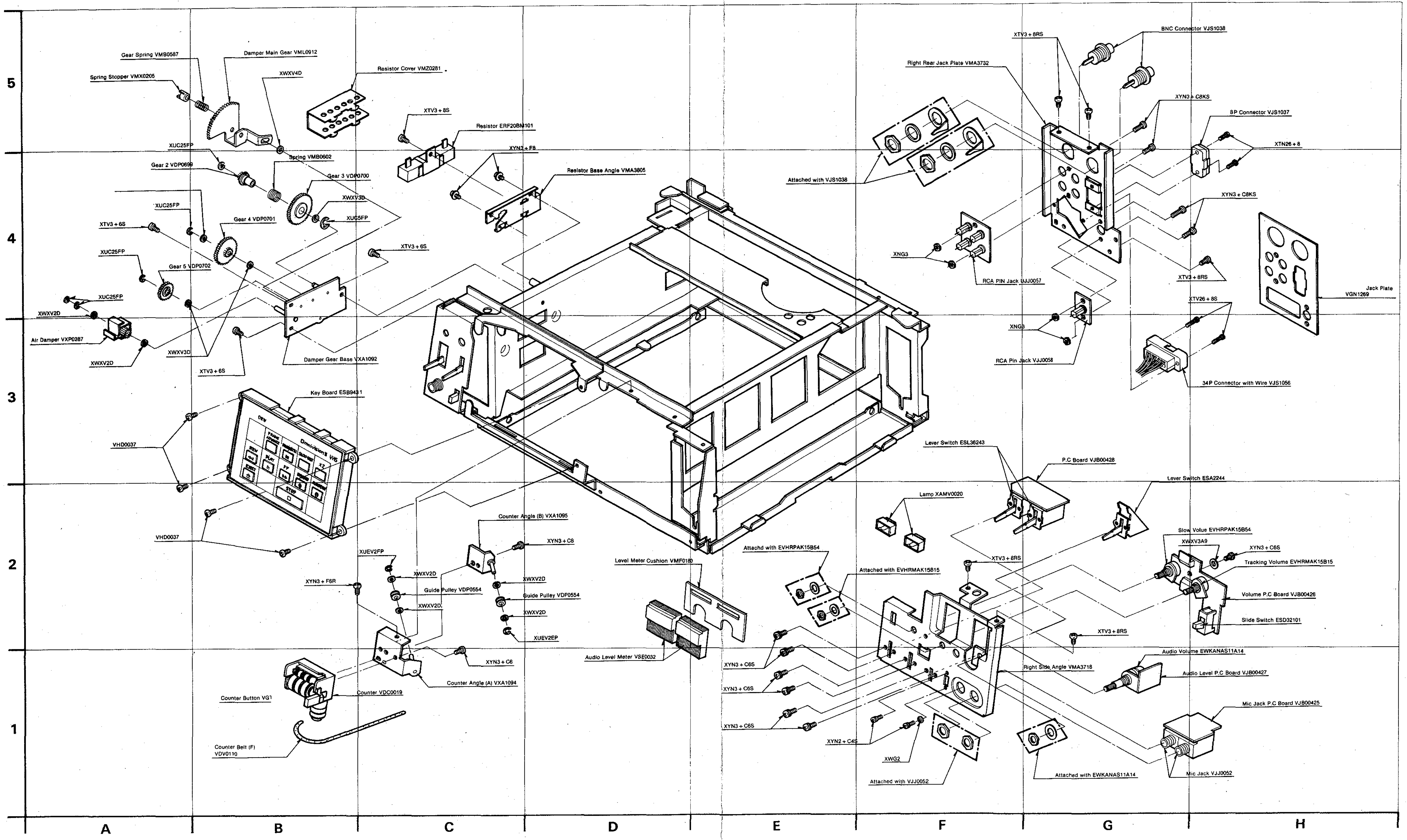
(120) NV8200

❻ Chassis Frame Section-(2)


5
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Gear Spring VMB0587
Damper Main Gear VML0912
Spring Stopper VMX0205
XWXV4D
Resistor Cover VMZ0281
XTV3 + 8S
Resistor ERF20BM101
XYN3 + F8
Resistor Base Angle VMA3805
XUC25FP
Gear 2 VDP0699
Spring VMB0602
Gear 3 VDP0700
XWXV3D
XUC5FP
XUC25FP
Gear 4 VDP0701
XTV3 + 6S
XUC25FP
Gear 5 VDP0702
XTV3 + 6S
XUC25FP
XWXV2D
Air Damper VXP0287
XWXV2D
XWXV3D
XTV3 + 6S
Damper Gear Base VXA1092
Key Board ESB9431
VHD0037
VHD0037
DEW
FRAME ADVANCE
Omnivision II VHS
REW
PLAY
FF
EJECT
STOP
X2
Counter Angle (B) VXA1095
XYN3 + C8
XUEV2FP
XWXV2D
XYN3 + F6R
Guide Pulley VDP0554
XWXV2D
XWXV2D
Guide Pulley VDP0554
XWXV2D
XUEV2EP
XYN3 + C6
Counter Angle (A) VXA1094
Counter VDC0019
Counter Button VG1
Counter Belt (F)
VDV0110
Level Meter Cushion VMF0180
Audio Level Meter VSE0032
XTV3 + 8RS
BNC Connector VJS1038
Right Rear Jack Plate VMA3732
XYN3 + C8KS
8P Connector VJS1037
XTN26 + 8
Attached with VJS1038
XYN3 + C8KS
XNG3
RCA PIN Jack UJJ0057
XTV3 + 8RS
Jack Plate
VGN1269
XTV26 + 8S
XNG3
RCA Pin Jack VJJ0058
34P Connector with Wire VJS1056
Lever Switch ESL36243
P.C Board VJB00428
Lever Switch ESA2244
Lamp XAMV0020
Attachd with EVHRPAK15B54
Slow Volue EVHRPAK15B54
XWXV3A9
XYN3 + C6S
XTV3 + 8RS
Tracking Volume EVHRMAK15B15
Attached with EVHRMAK15B15
Volume P.C Board VJB00426
Slide Switch ESD32101
XTV3 + 8RS
XYN3 + C6S
Audio Volume EWKANAS11A14
Right Side Angle VMA3718
Audio Level P.C Board VJB00427
XYN3 + C6S
Mic Jack P.C Board VJB00425
XYN3 + C6S
XYN2 + C4S
XWG2
Attached with VJJ0052
Attached with EWKANAS11A14
Mic Jack VJJ0052

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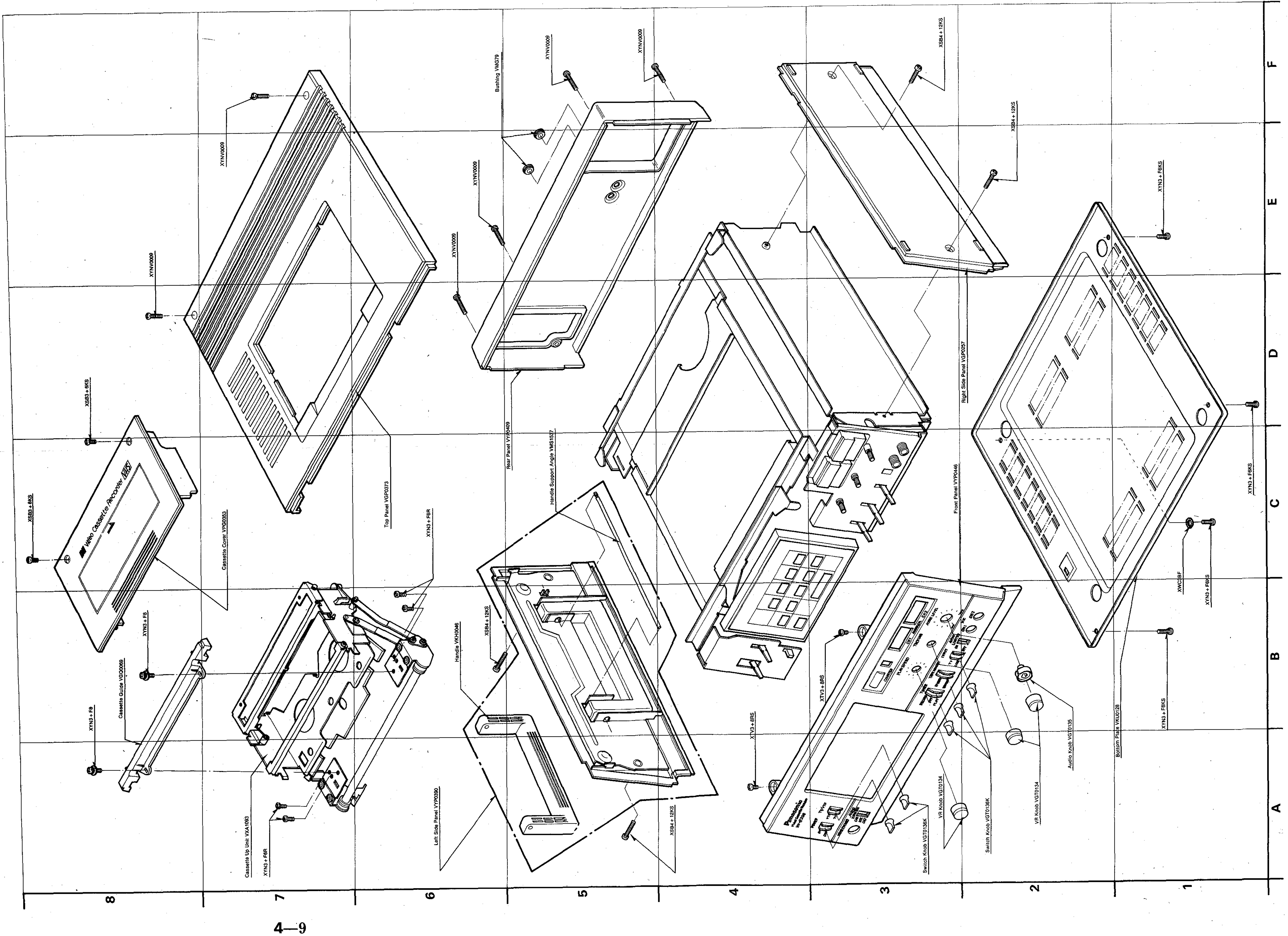
⑦ Casing Parts Section



XYNV0009
Bushing VMG79
XYNV0009
XYNV0009
XSB4 + 12KS
XSB4 + 12KS
XYNV0009
XYNV0009
XYN3 + F6KS
Right Side Panel VGP0257
Rear Panel VYP0409
Handle Support Angle VMS1537
Top Panel VGP0373
XSB3 + 6KS
XSB3 + 6KS
Cassette Cover VYP0353
XYN3 + F6R
Front Panel VYP0446
XYN3 + F6KS
XWC3BF
XYN3 + F6KS
XYN3 + F8
XSB4 + 12KS
Handle VKH0046
XTV3 + 8RS
XYN3 + F8
Cassette Guide VGQ0069
XTV3 + 8RS
XYN3 + F6KS
Bottom Plate VKU0128
Audio Knob VGT0135
VR Knob VGT0134
Switch Knob VGT0136K
VR Knob VGT0134
Switch Knob VGT0136K
XSB4 + 12KS
Left Side Panel VYP0390
Cassette Up Unit VXA1093
XYN3 + F6R
Video Cassette Recorder
Panasonic
F
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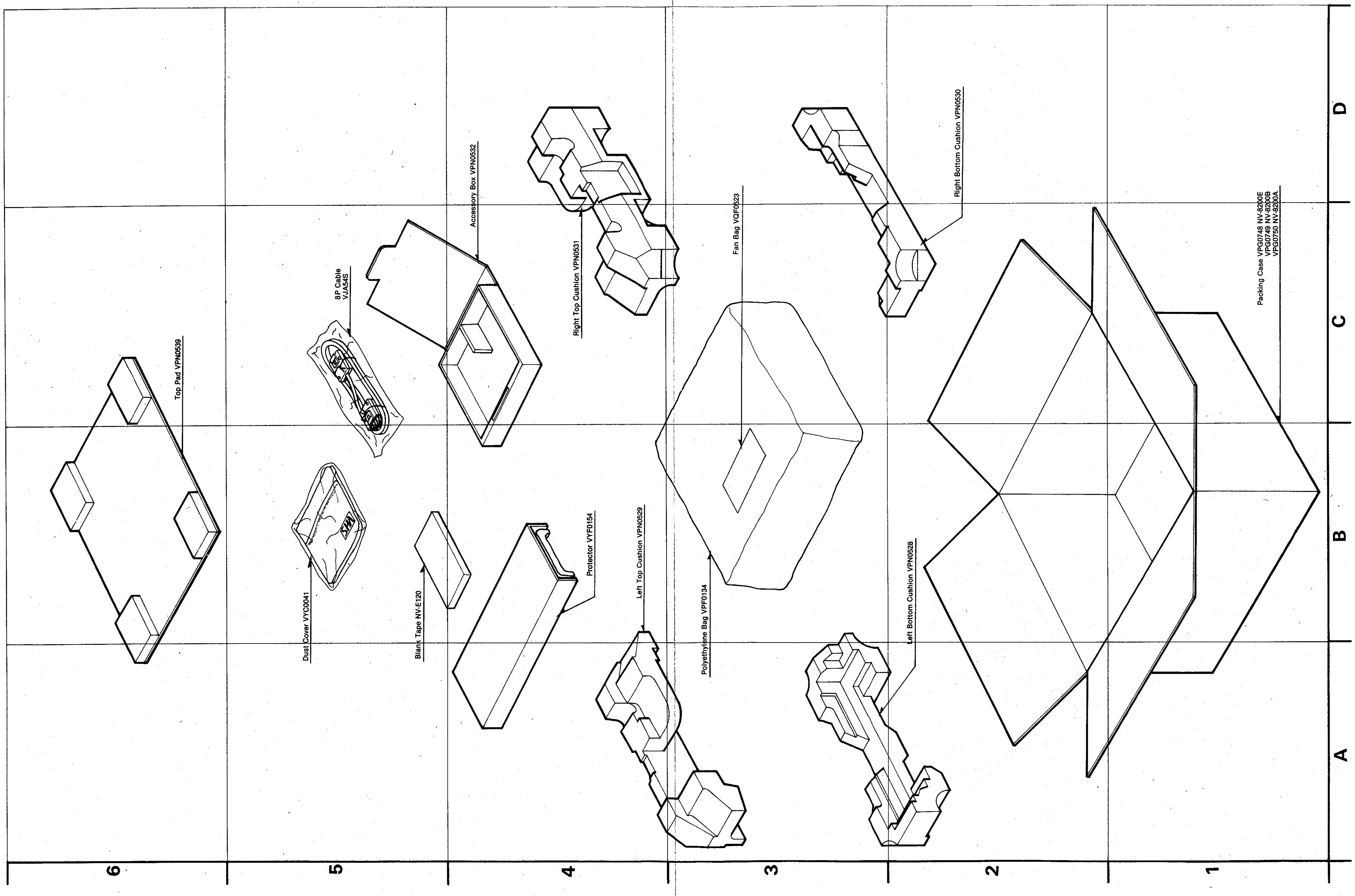
(122) NV 8200

❽ *Packing Parts Section*


Top Pad VPN0539
8P Cable VJA545
Accessory Box VPN0532
Right Top Cushion VPN0531
Fan Bag VQF0523
Right Bottom Cushion VPN0530
Packing Case VPG0748 NV-8200E
VPG0749 NV-8200B
VPG0750 NV-8200A
Dust Cover VYC0041
Blank Tape NV-E120
Protector VYF0154
Left Top Cushion VPN0529
Polyethylene Bag VPF0134
Left Bottom Cushion VPN0528
A
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MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-8200

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
2. The column of Ref. No. indicates the number of exploded view and the located position of the part. Refer to exploded views of No. 1—7 and see the cross section of the horizontal column (1—up) and the vertical column (A—up).
3. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety.
   When replacing any of these components, use only the original ones.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
5 (5-C)		2SA837	Power Transistor	1	
6 (5-C)		ERF20BM101	Resistor	1	
6 (3-H)		ESA2244	Lever Switch	1	
6 (3-B)		ESB9431	Key Board	1	
5 (3-C)		ESD32100	Switch	1	
6 (1-H)		ESD32101	Slide Switch	1	
5 (5-F)		ESE37210	Power Voltage Selector	1	
			Switch		
5 (4-C)		ESL21149T	Power Switch	1	
6 (3-F)		ESL36243	Lever Switch	1	
5 (4-C)		ESL36245	Lever Switch	1	
5 (5-B)		ETP80T1E	Power Transformer	1	
6 (2-H)		EVHRMAK15B15	Tracking VR	1	
6 (2-H)		EVHRPAK15B54	Slow VR	1	
6 (1-H)		EWKANAS11A14	Audio VR	1	
8 (5-B)		NV-E120	Blank Tape	1	Not available as ser-
					vice parts, please
					order to sales section.
2 (5-D)		PN150NV	Photo Transistor	2	
3 (5-D)					
1 (3-E)		QSMQ043	Micro Switch	1	
3 (4-G)		TML0534	Solenoid Lever	1	
1 (6-E)		VBR0030	AC Head	1	
1 (4-B)		VBS0014	Full Erase Head	1	
5 (3-D)		VDB0358	Rivet	1	
3 (5-D)		VDB0364	Spacer	2	
3 (1-G)(1-H)		VDB0371	Thrust Bearing	2	
2 (7-F)		VDB0472	Stopper	1	
6 (1-C)		VDC0019	Counter	1	
1 (3-B)		VDP0543	Sub Roller A	1	
1 (1-A)(2-A)		VDP0546	Loading Roller	4	
(3-B)(4-B)					
3 (2-H)		VDP0549	Loading Gear	1	
6 (2-C)(2-D)		VDP0554	Guide Pulley	2	
3 (1-C)		VDP0622	Inter Mediate Pulley	1	
3 (1-F)		VDP0671	Servo Roller	1	
3 (1-F)		VDP0681	Worm Wheel	1	
3 (2-G)		VDP0682	Loading Gear B	1	
1 (3-D)		VDP0692	Loading Roller (B)	2	
5 (4-A)		VDP0699	Gear 2	1	
6 (4-B)		VDP0700	Gear 3	1	
6 (4-B)		VDP0701	Gear 4	1	
6 (4-A)		VDP0702	Gear 5	1	
3 (1-A)		VDP0712	Threading Gear B	1	
3 (2-B)		VDP0713	Threading Gear C	1	
2 (3-F)		VDP0716	Standby Roller	1	
3 (3-H)		VDP0719	Motor Fan	1	
1 (8-F)		VDP0720	Panel Support	1	
3 (6-D)		VDR0087	Reel Cap B	2	
2 (1-B)		VDV0103	Reel Belt	1	
4 (4-E)		VDV0075	Counter Belt	1	
3 (1-D)		VDV0092	Reel Belt B	1	
3 (1-E)		VDV0094A	Capstan Belt	1	
3 (1-E)		VDV0094B	Capstan Belt	1	
3 (1-E)		VDV0094C	Capstan Belt	1	
3 (1-E)		VDV0104	Servo Belt	1	
3 (2-F)		VDV0105	Loading Belt	1	
6 (1-B)		VDV0110	Counter Belt F	1	
1 (8-D)		VEG0170	DD Cylinder Unit	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
1 (7-C)		VEH0121	Upper Cylinder Unit	1	
3 (3-G)		VEK0494	Capstan Motor P.C. Board	1	
2 (6-F)		VEK0625	Detector (P)	1	
3 (2-F)		VEM0101	Loading Motor Unit	1	
3 (3-G)		VEM0099	Capstan Motor Unit	1	
3 (1-B)		VEM0109	Sub Loading Motor Unit	1	
5 (5-F)		VEP0175A	Line Filter Unit	1	
5 (3-F)		VEP0167A	Power P.C. Board Ass'y	1	
6 (4-H)		VGN1269	Jack Plate	1	
5 (5-H)		VGN1445	Rear Jack Panel	1	
7 (6-C)		VGP0373	Top Panel	1	
7 (2-D)		VGP0257	Right Side Panel	1	
7 (7-C)		VGP0353	Cassette Cover	1	
7 (8-B)		VG90069	Cassette Guide	1	
5·(2-D)(1-E)		VGQ0103	Angle Holder	4	
(4-F)					
5 (3-D)		VGQ0104	RF Converter Case	1	
4 (1-F)		VGQ0106	Protector	1	
7 (3-A)(2-A)		VGT0134	VR Knob	3	
7 (2-A)		VGT0135	Audio Knob	1	
7 (3-A)(2-A)		VGT0136K	Switch Knob	5	
6 (1-B)		VGT0137	Counter Button	1	
1 (7-E)		VHD0032	Adjust Screw	1	
1 (1-F)		VHN0011	Rivet	2	
5 (1-D)		VHN0011	Foot	2	
5 (5-H)		VJA45	AC Cord	1	NV-8200E
5 (5-H)		VJA0074	AC Cord	1	NV-8200B
5 (5-H)		VJA0087	AC Cord	1	NV-8200A
3 (5-D)		VJB00132	Supply Sensor P.C. Board	1	
1 (1-F)		VJB00174	AC Head Connection	1	
			P.C. Board		
2 (5-D)		VJB00183	Takeup Sensor	1	
1 (2-E)		VJB00441	Loading End P.C. Board	1	
3 (1-H)		VJB0335	Loading Motor P.C. Board	1	
6 (1-H)		VJB00425	Mic Jack P.C. Board	1	
6 (2-H)		VJB00426	VR P.C. Board	1	
6 (1-H)		VJB00427	Audio Level P.C. Board	1	
6 (3-G)		VJB00428	P. C. Board	1	
5 (3-C)		VJB00431	Switch P.C. Board	1	
5 (3-C)		VJB00433	Headphone P.C. Board	1	
5 (3-D)		VJB00434	RF Connector P.C. Board	1	
4 (4-D)		VJB00435	Reel Sensor P.C. Board	1	
4 (1-C)		VJB00438	REC Inhibit P.C. Board	1	
4 (5-B)		VJB00463	Cassette in Sub Switch	1	
5 (5-H)		VJH0082	GND Terminal	1	
6 (1-H)		VJJ0052	Mic Jack	2	
5 (3-B)		VJJ0056	Headphone Jack	1	
6 (4-F)		VJJ0057	RCA Pin Jack	1	
6 (4-F)(3-G)		VJJ0058	RCA Pin Jack	2	
1 (2-F)		VJP0089	3 Pin Connector	1	
1 (2-F)		VJP0090	5 Pin Connector	1	
1 (1-F)		VJP0094	5 Pin Connector	1	
3 (6-H)(4-H)		VJR3	Wire Clamper	3	
(5-H)					
6 (5-H)		VJS1037	8 Pin Connecotr	1	
6 (5-G)		VJS1038	BNC Connector	2	
6 (3-H)		VJS1056	34 Pin Connector	1	
7 (6-B)		VKH0046	Handle	1	
7 (1-A)		VKU0128	Bottom Plate	1	
4 (6-D)(6-E)		VMA1068	Oprete Link	3	
(5-E)					
2 (4-F)(1-A)		VMA2543	Spring Hook	3	
(7-C)					
3 (4-H)		VMA2545	Solenoid Bracket	1	
1 (5-C)(5-E)		VMA2560	Shaft Holder Spring	2	
2 (5-C)		VMA2568	Transistor Holder	2	
3 (5-D)					
1 (1-E)		VMA2599	P. B. Bracket	1	
1 (5-C)(5-E)		VMA3106	Protector S	2	
1 (8-C)		VMA3165	Wire Cover	1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
3 (5-A)	VMA3365	Tension Spring Hook	1	
3 (4-C)	VMA3435	Transistor Bracket	1	
1 (6-B)	VMA3495	Holder Stopper	1	
4 (1-D)	VMA3695	Solenoid Bracket	1	
4 (1-C)	VMA3697	Micro Switch Bracket	1	
1 (6-E)	VMA3709	Head Base (B)	1	
3 (6-E)	VMA3710	Connecting Plate	1	
5 (2-G)	VMA3716	Right Frame A	1	
5 (2-F)	VMA3717	Right Frame B	1	
6 (1-G)	VMA3718	Right Side Angle	1	
5 (1-H)	VMA3721	P.C. Board Frame	2	
5 (2-C)	VMA3723	Front Frame A	1	
5 (4-E)	VMA3724	Left Side Frame	1	
5 (4-H)	VMA3725	Rear Frame A		
5 (4-H)	VMA3726	Rear Frame B	1	
5 (1-A)	VMA3727	Operating Board Angle A	1	
5 (2-A)	VMA3728	Operating Board Angle B	1	
5 (1-E)(4-F)	VMA3729	P.C. Board Reinforcement	2	
		Angle		
6 (4-G)	VMA3732	Right Rear Jack Plate	1	
5 (4-E)	VMA3742	Left Side Frame	1	
5 (4-A)	VMA3745	Switch Angle	1	
5 (5-D)	VMA3747	Power Transistor Plate	1	
5 (3-E)	VMA3748	Power P.C. Board Angle	1	
4 (8-D)	VMA3763	Cassette Up Stand	1	
2 (7-F)	VMA3773	Loading Solenoid Bracket	1	
3 (2-A)	VMA3774	Loading Switch Cover A	1	
5 (3-C)	VMA3777	Left Side Sub Angle	1	
4 (4-B)	VMA3800	Switch Bracket	1	
6 (4-D)	VMA3805	Resistor Base Angle	1	
3 (5-H)	VMA3809	Spring Hook Angle	1	
1 (6-F)	VMA3872	X Ratio Adjusting Plate	1	
6 (5-F)	VMA3732	Right Rear Jack Plate	1	
5 (5-G)	VMA4224	Jack Angle	1	
4 (5-B)	VMA5377	Micro Switch Fiber	1	
4 (1-B)(4-B)	VMA5377	Micro Switch Cover	2	
2 (1-B)	VMB0398	REW Arm Spring	1	
2 (6-C)	VMB0399	Play Arm Spring	1	
2 (3-E)	VMB0401	FF Arm Spring	1	
2 (8-D)	VMB0403	Return Spring	1	
1 (7-E)	VMB0404	Adjust Spring	2	
3 (4-G)				
2 (7-A)(7-C)	VMB0413	Brake Lever Spring	2	
2 (7-B)	VMB0414	Brake Arm Spring	1	
1 (5-B)	VMB0418	Inertia Roller Spring	1	
1 (3-E)	VMB0478	Post Spring	1	
1 (3-A)	VMB0528	Release Lever Spring	1	
1 (3-C)	VMB0529	Release Spring	1	
3 (6-A)	VMB0530	Tension Spring	1	
1 (5-B)	VMB0531	Erase Head Arm Spring	1	
1 (4-A)	VMB0532	Post Spring	1	
1 (3-E)	VMB0542	Unloading Switch Actuator	1	
2 (7-C)	VMB0545	Pause Brake Spring	1	
2 (6-E)	VMB0568	Pressure Release Lever	1	
		Spring		
1 (3-B)	VMB0569	Change Spring	1	
4 (6-C)(5-D)	VMB0584	Link Spring	3	
4 (2-C)	VMB0585	Main Lever Spring	1	
4 (3-A)(2-B)	VMB0586	Spring	3	
(2-C)				
6 (5-A)	VMB0587	Gear Spring	1	
2 (4-B)	VMB0588	REW Arm Spring	1	
3 (4-B)	VMB0590	Arm Spring	1	
2 (3-B)	VMB0592	Eject Lever Spring	1	
3 (4-A)	VMB0593	Spring	1	
1 (5-F)	VMB0596	Sliding Arm Spring	1	
2 (7-D)	VMB0598	Loading Brake Spring (B)	1	
2 (2-F)	VMB0597	Play Arm Holder Spring	1	
6 (4-B)	VMB0602	Spring	1	
3 (3-G)	VMB0612	FF Tension Spring	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
3 (5-A)	VMB0613	Loading Tension Spring	1	
1 (6-F)	VMB3827	X Ratio Adjusting Plate	1	
1 (5-D)	VMD0075	Head Base (F)	1	
6 (2-D)	VMF0180	Level Meter Cushion	1	
7 (6-F)	VMG79	Bushing	2	
1 (4-F)(6-B)	VMG0170	Stand Cushion	2	
3 (1-F)	VMG0190	Roller Cam	1	
5 (2-E)	VMG0198	Foot	4	
3 (5-H)	VML0534	Solenoid Lever	1	
1 (3-D)	VML0571	Switch Link	2	
3 (6-G)	VML0826	Connecting Link	1	
3 (4-G)	VML0827	Release Lever A	1	
3 (4-F)	VML0828	Release Lever B	1	
4 (7-D)	VML0874	Connecting Link	1	
4 (2-D)	VML0876	Solenoid Lever	1	
4 (6-A)	VML0877	Select Lever	3	
2 (4-D)	VML0882	FF Lever	1	
2 (5-A)	VML0883	REW Slide Lever (J)	1	
2 (1-A)	VML0885	Safety Link (J)	1	
1 (3-A)	VML0888	Change Link	1	
3 (4-B)	VML0893	Lock Lever A	1	
3 (3-B)	VML0894	Lock Lever B	1	
3 (4-B)	VML0897	Cassette Detect Lever	1	
2 (3-E)	VML0898	Threading Lever	1	
3 (5-E)	VML0899	Cam		
2 (4-D)	VML0901	Lock Release Lever	1	
2 (2-F)	VML0903	Play Arm Holder	1	
3 (5-F)	VML0911	Sub Pressure Lever	1	
6 (5-B)	VML0912	Damper Main Gear	1	
2 (1-F)	VML0913	Soft Brake Lever	1	
2 (6-D)	VML0918	Sub Play Arm (F)	1	
2 (4-A)	VML0936	Soft Brake Release Lever	1	
2 (5-A)	VML0938	FF Slide Lever (P)	1	
2 (6-A)	VML0940	Brake Arm Support	1	
3 (5-E)	VMP0022	Oil Pool	1	
3 (1-H)	VMS1463	Worm Shaft	1	
3 (1-F)	VMS1464	Worm Wheel Shaft	1	
7 (5-C)	VMS1537	Handle Support Angle	2	
4 (2-E)	VMS1547	Solenoid Pin	1	
2 (4-A)(5-A)	VMX0122	Slide Washer (A)	19	
(6-A)				
3 (5-E)	VMX0123	Oil Cap	1	
3 (2-E)	VMX0124	Threst Stopper	1	
1 (2-B)	VMX0139	Spacer	1	
2 (5-C)	VMX0157	Slast Wahser	2	
3 (1-C)				
1 (4-A)	VMX0186	Post Sleeve	1	
1 (4-E)	VMX0203	Limiter Cap	1	
1 (5-B)	VMX0205	Spring Stopper	2	
6 (5-A)				
3 (4-F)	VMX0212	Holder	1	
1 (5-B)	VMX0215	Clamper	1	
1 (3-E)	VMX0233	Post Sleeve (F)	1	
5 (5-D)	VMZ0277	Power Insulate Seat	1	
5 (4-C)	VMZ0279	Power Transformer Insu-	1	
		late Seat		
5 (5-C)	VMZ0280	Plate Insulate Seat	1	
6 (5-C)	VMZ0281	Resistor Cover	1	
8 (3-B)	VPF0134	Polyethlene Bag	1	
8 (1-C)	VPG0748	Packing Case	1	NV-8200E
8 (1-C)	VPG0749	Packing Case	1	NV-8200B
8 (1-C)	VPG0750	Packing Case	1	NV-8200A
8 (2-B)	VPN0528	Left Bottom Cushion	1	
8 (4-B)	VPN0529	Left Top Cushion	1	
8 (2-D)	VPN0530	Right Bottom Cushion	1	
8 (4-C)	VPN0531	Right Top Cushion	1	
8 (4-D)	VPN0532	Accessory Box	1	
8 (6-C)	VPN0539	Top Pad	1	
8 (3-C)	VQF0523	Fan Bag	1	
1 (2-D)	VRT0004	Thermal	1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
6 (1-D)	VSE0032	Audio Level Meter	2	
3 (5-H)	VSJ0036	Pressure Roller Solenoid	1	
4 (2-E)	VSJ0041	Main Solenoid	1	
2 (7-E)	VSJ0042	Loading Solenoid	4	
4 (1-C) (5-B)	VSM0027	Micro Switch	2	
2 (6-F)	VSQ0054	Dew Sensor	1	
5 (1-A)	VXA0111	Front Frame B	1	
1 (2-B)	VXA0705	Roller Bracket A Unit	1	
1 (1-B)	VXA0706	Roller Bracket B Unit	1	
1 (8-B)	VXA0853	Inclined Base (A)	1	
1 (7-B)	VXA0856	Shaft Holder (A) Unit	1	
1 (7-D)	VXA1084	Inclined Base (B)	1	
1 (7-D)	VXA1083	Shaft Holder (B) Unit	1	
1 (8-C)	VXA0869	Brush Angle	1	
3 (2-G)	VXA0950	Loading Motor Bracket Unit	1	
2 (6-D)	VXA0995	Opener	1	
1 (5-D)	VXA1024	Loading Ring A Unit	1	
3 (3-B)	VXA1065	Cassette Lock Base Unit	1	
4 (4-D)	VXA1067	Solenoid Base Unit	1	
5 (2-H)	VXA1081	Audio P.C. Board Angle	1	
1 (4-D)	VXA1082	Loading Ring B Unit	1	
1 (2-E)	VXA1086	Leaf Switch Bracket	1	
4 (4-E)	VXA1088	Counter Pulley Holder	1	
4. (4-E)	VXA1089	Reel Sensor Bracket Unit	1	
3 (2-C)	VXA1090	Gear Base Unit	1	
6 (3-B)	VXA1092	Damper Gear Base	1	
7 (7-A)	VXA1093	Cassette Up Unit	1	
6 (1-C)	VXA1094	Counter Angle (A)	1	
6 (2-D)	VXA1095	Counter Angle (B)	1	
3 (2-F)	VXA1105	Thrust Holder Unit	1	
3 (4-B)	VXA1107	Cassette Lock Unit	2	
1 (3-F)	VXA1116	Lamp Bracket Unit	1	
5 (4-E)	VXA1129	Reinforcement Angle	1	
4 (3-E)	VXA3696	Reel Sensor Bracket	1	
3 (4-E)	VXD0032	Capstan Holder	1	
3 (5-B)	VXK0301	Tension Arm Base Unit	1	
1 (4-B)	VXK0332	Erase Head Base Unit	1	
5 (3-E)	VXK0394	Left Side Frame	1	NV-8200E
5 (3-E)	VXK0401	Left Side Frame	1	NV-8200B
5 (3-E)	VXK0402	Left Side Frame	1	NV-8200A
2 (4-B)	VXL0405	REW Arm	1	
2 (3-F)	VXL0456	FF Arm (B)	1	
3 (4-H)	VXL0538	Spring Hook Lever	1	
3 (5-G)	VXL0552	Connecting Lever B	1	
1 (5-A)	VXL0555	Inertia Roller Arm Unit	1	
3 (4-G)	VXL0628	Connecting Lever A Unit	1	
3 (1-E)	VXL0632	Pulley Arm	1	
3 (5-F)	VXL0540	Main Pressure Arm	1	
2 (5-D)	VXL0655	Play Arm (F)	1	
4 (7-B)	VXL0658	Brake Release Lever	1	
4 (3-D)	VXL0742	Main Lever Unit	1	
3 (6-B)	VXL0662	Tension Arm P Unit	1	
1 (2-B)	VXL0665	Band Release Lever	1	
2 (3-F)	VXL0675	Action Lever	1	
2 (7-C)	VXL0679	Pause Brake	1	
1 (5-F)	VXL0684	Threading Arm Unit	1	
2 (7-C)	VXL0686	Loading Brake	1	
3 (5-A)	VXL0689	Loading Tension Arm Unit	1	
2 (3-A)	VXL0690	REW Lever	1	
2 (3-A)	VXL0693	Eject Lever (B)	1	
2 (4-E)	VXL080	Ling Lever	1	
1 (8-B)	VXP0239A	Roller Post	1	
1 (8-D)	VXP0239C	Roller Post	1	
2 (4-C)	VXP0242	REW Roller	1	
2 (6-C)	VXP0243	Play Idler	1	
2 (1-B)	VXP0244	Main Pulley	1	
2 (4-E)	VXP0245	FF Idler Unit	1	
1 (8-E)	VXP0247	Inertia Roller Arm	1	
3 (1-G)	VXP0270	Worm Unit	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
2 (1-D)	VXP0279	Play Pulley	1	
1 (6-A)	VXP0280	Inertia Roller Unit	1	
3 (1-C)	VXP0283	Capstan Shaft	1	
6 (3-A)	VXP0287	Air Damper	1	
3 (6-F)	VXP0293	Pressure Roller Arm Unit	1	
4 (5-E)	VXP0294	Counter Pulley Unit	1	
3 (2-A)	VXP0296	Loading Switch Unit	1	
3 (6-E)	VXR0088	Takeup Reel Table Unit	1	
4 (5-D)	VXS0047	Brush Unit	1	
3 (5-C)	VXZ0056	Tension Band Unit	1	
2 (7-B)	VXZ0071	Brake (A)	1	
2 (7-C)	VXZ0660	Brake (B)	1	
3 (4-F)	VXZ0068	FF Brake Lever	1	
2 (6-B)	VXZ0070	Seft Brake Lever	1	
3 (6-C)	VXR0076	Supply Reel Table Unit	1	
8 (4-B)	VYC0041	Dust Cover	1	
8 (4-B)	VYF0154	Protector	1	
7 (3-C)	VYP0446	Front Panel	1	
7 (6-A)	VYP0390	Left Side Panel	1	
7 (5-C)	VYP0409	Rear Panel	1	
1 (4-E)	XAMV0019	Sensor Lamp	1	
6 (2-F)	XAMV0020	Lamp	2	
3 (5-H)	XRHV3XB	Solenoid Pin	1	
	VHD0037		4	
2 (6-D)	VMB0546	Pause Brake Spring (B)	1	
2 (5-A)	VML0938	FF Slide Lever (P)	1	
2 (4-B)	VMX0157		1	
1 (4-F)	VXA1116	Lamp Bracket Unit	1	
	XSB3+6KS		2	
	XSB4+12KS		4	
	XSN3+C8S		1	
	XSN3+12S		1	
	XSN4+8		3	
	XSN4+8S		1	
	XSS3+6		1	
	XSN3+6S		2	
	XTV+8S		2	
	XTV3+6FFS		2	
	XTV3+6RS		5	
	XTV3+6S		15	
	XTV3+6XS		1	
	XTV3+8RS		24	
	XTV3+8S		56	
	XTV3+10B		2	
	XTV3+10S		1	
	XTV3+15S		1	
	XTV4+F6S		2	
	XTV26+8S		2	
	XUC2FP		1	
	XUC3FP		13	
	XUC3+8S		1	
	XUC5FP		1	
	XUC25FP		10	
	XUEV2FP		4	
	XUEV3FP		5	
	XUEV4FP		20	
	XUEV4D9		1	
	XWA3		2	
	XWC4BF		3	
	XWE2		1	
	XWG2		1	
	XWG3		7	
	XNG4		1	
	XWXV3A9		1	
	XWXV2D		9	
	XWXV3D		14	
	XWXV3D54		6	
	XWXV4D		2	
	XWXV4D9		24	
	XWXV4D65		3	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		XWXV5		1	
		XXE2D2FP		2	
		XXE3A6		1	
		XYN2+C4		2	
		XYN2+C4S		2	
		XYN2+C6		1	
		XYN2+C10		4	
		XYN3+C4S		1	
		XYN3+C6S		18	
		XYN3+C8		1	
		XYN3+C8KS		2	
		XYN3+D8S		1	
		XYN3+F6KS		4	
		XYN3+F6R		4	
		XYN3+F6S		4	
		XYN3+F8		3	
		XYN3+F8S		5	
		XYN3+10BNC		1	
		XYN4+C25C		2	
		XYN4+F8S		4	
		XYN26+5CS		6	
		XYN26+5S		1	
		XYN26+8		1	
		XYNV0009		6	

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ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-8200

Notes:
1. * Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety.
   When replacing any of these components, use only the original ones.
3. Unless otherwise specified.
   All resistors are in OHMS (Ω), 1/8W ±5% carbon. K=1,000Ω, M=1,000KΩ.
   All capacitors are in MICROFARADS (μF), ±10% P=μμF.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
		VEP0167A	Power Supply P. C. Board	1	
		VEP0175A	Line Filter P. C. Board	1	
		VEP0685D1	System Control I P. C.	1	
			Board		
		VEP0686A1	System Control II P. C.	1	
			Board		
		VEP0293D1	Servo Control P. C. Board	1	
		VEP0389A1	Luminance Process P. C.	1	
			Board		
		VEP0858A1	Colour Process P. C. Board	1	
		VEP0451B1	Audio P. C. Board	1	
		VEP0455A	Noise Reduction P. C.	1	
			Board		
		VJB00425	Mic Jack P. C. Board	1	
		VJB00426	Audio Limiter SW Tracking	1	
			Slow VR P. C. Board		
		VJB00427	Audio Level VR P. C. Board	1	
		VJB00428	Auto Repeat/Rew Ind. SW	1	
			Timer Re/Play SW P. C.	1	
			Board		
		VJB00429	Power Transistor P. C.	1	
			Board		
		VJB00431	Audio Monitor SW P. C.	1	
			Board		
		VJB00434	RF Connector P. C. Board	1	
		VJB00436	Cassette in SW P. C. Board	1	
		VJB00437	Sub Loading SW P. C. Board	1	
		VJB00438	Rec Inhibit SW P. C. Board	1	
		VJB00441	Loading End SW P. C. Board	1	
		VJB00424	Jack P. C. Board	1	
		VJB00477	Loading Motor Dew Sensor	1	
			P. C. Board		
		VJB00430	Sensor Lamp P. C. Board	1	
		VJB00433	Head Phone P. C. Board	1	
		JB0687	Operater P. C. Board	1	
		VJB00435	Reel Sensor P. C. Board	1	
		VJB00590	Noise Reduction SW	1	
			P. C. Board		

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			POWER SUPPLY CIRCUIT		
			BOARD		
			Diodes		
D1,2		10E1LF		2	
D3		30DC1R		1	
D4,5		30D1FAS		2	
			Capacitors		
C2-7		ECKW1H103PF	Ceramic 50V 0.01	6	
C8,9		ECET35R472SL	Electrolytic 35V 4700	2	
			Connector		
		VJP0090	5P		
			Miscellaneous		
		VJH24	Check Terminal	2	
			LINE FILTER PRINTED		
			CIRCUIT BOARD		
			Fuses		
F1		XBA2C10TR0	1A	1	
F2		XBA2C40TR0	4A	1	
			Capacitors		
C1,10		ECKDHS472MD	Ceramic 400V 4700	2	
L1		VTQ0006	Line Filter	1	
			Miscellaneous		
		TJC6320	Fuse Holder	4	
		VJH24	Check Terminal	5	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			SYSTEM CONTROL I CIRCUIT		
			BOARD		
			Integrated Circuits		
IC1-4		EHMK819E38		4	
IC5		UPD4025C		1	
		MSM4025RS			
IC6,7		EHMK819E38		2	
IC8		AN6551		1	
			Transistors		
Q1		2SB641		1	
Q2		2SD636		1	
Q3		2SB641		1	
Q4		2SD636		1	
Q5		2SB641		1	
Q6,7		2SD636		2	
Q8		2SB641		1	
Q9-17		2SD636		9	
			Diodes		
D1-13		MA150		13	
D21-30		MA150		10	
D31		RD91EB	Zener	1	
D32-42		MA150		11	
			Resistors		
R1		ERD10TJ103	10K	1	
R2		ERD10TJ183	18K	1	
R3		ERD10TJ103	10K	1	
R5,6		ERD10TJ103	10K	2	
R7		ERD10TJ102	1K	1	
R9-11		ERD10TJ224	220K	3	
R12,13		ERD10TJ104	100K	2	
R14		ERD10TJ563	56K	1	
R15		ERD10TJ223	22K	1	
R16-18		ERD10TJ224	220K	3	
R19,20		ERD10TJ333	33K	2	
R21		ERD10TJ102	1K	1	
R22		ERD10TJ563	56K	1	
R23		ERD10TJ273	27K	1	
R24		ERD10TJ183	18K	1	
R25-27		ERD10TJ333	33K	3	
R28		ERD10TJ102	1K	1	
R29		ERD10TJ563	56K	1	
R30		ERD10TJ333	33K	1	
R31		ERD10TJ822	8.2K	1	
R33		ERD10TJ183	18K	1	
R34		ERD10TJ333	33K	1	
R35		ERD10TJ103	10K	1	
R36		ERD10TJ223	22K	1	
R37		ERD10TJ563	56K	1	
R38		ERD10TJ103	10K	1	
R39		ERD10TJ272	2.7K	1	
R40		ERD10TJ563	56K	1	
R42		ERD10TJ103	10K	1	
R43		ERD10TJ332	3.3K	1	
R44		ERD10TJ183	18K	1	
R45		ERD10TJ563	56K	1	
R46,47		ERD10TJ223	22K	2	
R48,49		ERD10TJ223	22K	2	
R50,51		ERD10TJ103	10K	2	
R52		ERD10TJ562	5.6K	1	
R53		ERD10TJ333	33K	1	
R54		ERD10TJ223	22K	1	
R55		ERD10TJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R56		ERD10TJ223	22K	1	
R57		ERD10TJ333	33K	1	
R58		ERD10TJ563	56K	1	
R59		ERD10TJ272	2.7K	1	
R60		ERD10TJ472	4.7K	1	
R61		ERC14GJ155	1.5M	1	
R62		ERD10TJ473	47K	1	
R63,64		ERD10TJ563	56K	2	
R65		ERD10TJ224	220K	1	
R66		ERD10TJ223	22K	1	
R67		ERD10TJ105	1M	1	
R68		ERD10TJ224	220K	1	
R69		ERD10TJ103	10K	1	
R70		ERD10TJ183	18K	1	
R71		ERD10TJ822	8.2K	1	
R72		ERD10TJ221	220	1	
			Capacitors		
C1		ECSF35ER47	Tantalum 35V 0.47	1	
C2		ECSF35ER1	Tantalum 35V 0.1	1	
C3		ECSF35ER47	Tantalum 35V 0.47	1	
C4		ECSF35ER1	Tantalum 35V 0.1	1	
C5		ECEA1CS220	Electrolytic 16V 22	1	
C6		ECSF35ER47	Tantalum 35V 0.47	1	
C7		ECSF35ER1	Tantalum 35V 0.1	1	
C8		ECSF35ER47	Tantalum 35V 0.47	1	
C9		ECSF35ER1	Tantalum 35V 0.1	1	
C10		ECEA1CS220	Electrolytic 16V 22	1	
C11,12		ECSF35ER47	Tantalum 35V 0.47	2	
C13		ECSF35ER47	Tantalum 35V 0.47	1	
C14		ECSF35ER1	Tantalum 35V 0.1	1	
C15		ECEA1HS010	Electrolytic 50V 1	1	
C16		ECSF35E1	Tantalum 35V 1	1	
C17		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C18		ECSF35ER47	Tantalum 35V 0.47	1	
C19		ECSF35ER1	Tantalum 35V 0.1	1	
C20,21		ECEA1ES4R7	Electrolytic 25V 4.7	2	
C22		ECEA16Z220	Electrolytic 16V 220	1	
C23,24		ECEA1HS010	Electrolytic 50V 1	2	
			Connectors		
P601,602		VJP0094	10P	2	
P603		VJP0093	5P	1	
P604		VJP0094	10P	1	
P606,607		VJP0091	10P	2	
			Miscellaneous		
		VEK0680	3P Connector	1	
		VEK0681	5P Connector	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			SYSTEM CONTROL II CIRCUIT		
			BOARD		
			Integrated Circuits		
IC1-4		EHM108E10		4	
IC5		UPD4001C		1	
IC6		EHM108E10		1	
			Transistors		
Q1-6		2SD636		6	
Q7		2SC2497A		1	
Q8		2SD636		1	
Q9		2SC1318A		1	
Q10		2SD389A		1	
Q11		2SD636		1	
Q12		2SD637		1	
Q13		2SC2497		1	
Q14		2SB644		1	
Q15		2SD636		1	
Q16		2SC2497		1	
Q17-19		2SD636		3	
Q20		2SD946-R		1	
Q21		2SB641		1	
Q22		2SD946-R		1	
Q23		2SD636		1	
Q24		2SA886V		1	
Q25		2SC1847V		1	
Q26		2SA886V		1	
Q27		2SC1847V		1	
Q28,29		2SD636		2	
Q30		2SA886V		1	
Q31		2SC1847V		1	
Q32		2SA886V		1	
Q33		2SC1847V		1	
Q34		2SD636		1	
Q35		2SB512-P		1	
Q36		2SD637		1	
Q37-44		2SD636		8	
Q45		2SD946-R		1	
R47		2SD636		1	
Q48		2SB641		1	
Q49		2SD636		1	
Q50		2SB641		1	
Q51-54		2SD636		4	
Q55		2SD946-R		1	
Q56-61		2SD636		6	
Q62,63		2SB641		2	
Q64-66		2SD636		3	
Q67		2SC2497		1	
Q68-70		2SD636		3	
Q71		2SB641		1	
Q72,73		2SD639		2	
			Diodes		
D1-11		MA150		11	
D12		10E1LF		1	
D13		1S954		1	
D14		10E1LF		1	
D15-23		MA150		9	
D24		10E1LF		1	
D25-32		MA150		8	
D33		10E1LF		1	
D34-D53		MA150		20	
D54		10E1LF		1	
D55-64		MA150		10	
D65		10E1LF		1	
D66		RD62EB	Zener	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
D67-77		MA150		11	
D78		RD62EB	Zener	1	
D79,80		ERZC14DK330		2	
D81		10E1LF		1	
D82-D89		MA150		8	
			Resistors		
R1		ERQ12HJ3R9	Metal 1/2W 3.9	1	
R2		ERD10TJ393	39K	1	
R4		ERD10TJ103	10K	1	
R5		ERD10TJ563	56K	1	
R6		ERD10TJ393	39K	1	
R7		ERD10TJ154	150K	1	
R8		ERD10TJ223	22K	1	
R9		ERD10TJ563	56K	1	
R10,11		ERD10TJ103	10K	2	
R12		ERD10TJ333	33K	1	
R13		ERD10TJ102	1K	1	
R14		ERD10TJ223	22K	1	
R15		ERD10TJ563	56K	1	
R16,17		ERD10TJ152	1.5K	2	
R18		ERD10TJ332	3.3K	1	
R19		ERD10TJ221	220	1	
R20		ERD10TJ393	39K	1	
R21		ERD10TJ332	3.3K	1	
R22		ERD10TJ333	33K	1	
R23		ERD10TJ103	10K	1	
R24		ERD10TJ562	5.6K	1	
R25		ERD10TJ103	10K	1	
R26		ERD10TJ223	22K	1	
R27		ERQ12HJ3R9	Metal 1/2W 3.9	1	
R28		ERD10TJ223	22K	1	
R29		ERD10TJ221	220	1	
R30		ERD10TJ563	56K	1	
R31		ERD10TJ332	3.3K	1	
R32		ERD10TJ563	56K	1	
R33		ERD10TJ682	6.8K	1	
R34		ERD10TJ152	1.5K	1	
R35,36		ERD10TJ563	56K	2	
R37		ERD10TJ333	33K	1	
R38		ERD10TJ393	39K	1	
R39		ERD10TJ332	3.3K	1	
R40,41		ERD10TJ103	10K	2	
R42		ERD10TJ393	39K	1	
R43		ERD25VJ221	220	1	
R44		ERD10TJ104	100K	1	
R45		ERD10TJ473	47K	1	
R46		ERD25VJ472	1/4W 4.7K	1	
R47		ERD10TJ103	10K	1	
R48		ERD10TJ473	47K	1	
R49		ERD10TJ472	4.7K	1	
R50		ERD10TJ103	10K	1	
R51		ERD10TJ563	56K	1	
R52		ERD10TJ472	4.7K	1	
R53		ERD10TJ332	3.3K	1	
R54		ERD10TJ272	2.7K	1	
R55,56		ERD10TJ102	1K	2	
R57,58		ERD12SJ471	1/2W 470	2	
R59,60		ERD10TJ102	1K	2	
R61		ERD10TJ472	4.7K	1	
R62		ERD10TJ332	3.3K	1	
R63		ERD10TJ272	2.7K	1	
R64,65		ERD10TJ563	56K	2	
R66,67		ERD10TJ103	10K	2	
R68,69		ERD10TJ102	1K	2	
R70,71		ERD12SJ471	1/2W 470	2	
R72,73		ERD10TJ102	1K	2	
R74		ERD10TJ332	3.3K	1	
R75,76		ERD10TJ103	10K	2	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R77		ERD10TJ563	56K	1	
R78		ERD10TJ152	1.5K	1	
R79		ERD10TJ102	1K	1	
R80		ERD10TJ563	56K	1	
R81		ERD10TJ103	10K	1	
R82		ERD10TJ123	12K	1	
R83		ERD10TJ563	56K	1	
R84		ERD10TJ223	22K	1	
R85,86		ERD10TJ104	100K	2	
R87		ERD10TJ563	56K	1	
R88		ERD10TJ104	100K	1	
R89		ERD10TJ103	10K	1	
R90		ERD10TJ104	100K	1	
R91		ERD10TJ223	22K	1	
R92		ERD10TJ563	56K	1	
R93		ERD10TJ102	1K	1	
R94,95		ERD10TJ563	56K	2	
R96		ERD10TJ103	10K	1	
R97		ERD10TJ332	3.3K	1	
R98		ERD10TJ393	39K	1	
R99		ERD10TJ223	22K	1	
R100		ERD10TJ221	220	1	
R101		ERD10TJ104	100K	1	
R102,103		ERD10TJ472	4.7K	2	
R104		ERD10TJ103	10K	1	
R105		ERD10TJ393	39K	1	
R106		ERD10TJ221	220	1	
R107		ERD10TJ223	22K	1	
R108		ERD10TJ563	56K	1	
R109		ERD10TJ103	10K	1	
R110		ERD10TJ473	47K	1	
R111		ERD10TJ102	1K	1	
R112		ERD10TJ103	10K	1	
R113		ERD10TJ223	22K	1	
R114		ERD10TJ332	3.3K	1	
R115		ERD10TJ393	39K	1	
R116		ERD10TJ102	1K	1	
R117		ERD10TJ103	10K	1	
R118		ERD10TJ472	4.7K	1	
R119		ERD10TJ103	10K	1	
R120		ERD10TJ333	33K	1	
R121		ERD10TJ471	470	1	
R122		ERD10TJ102	1K	1	
R123		ERD10TJ563	56K	1	
R124		ERD10TJ224	220K	1	
R125		ERD10TJ563	56K	1	
R126		ERD10TJ224	220K	1	
R127		ERD10TJ103	10K	1	
R128		ERD10TJ104	100K	1	
R129		ERD10TJ563	56K	1	
R130		ERD10TJ332	3.3K	1	
R131		ERD10TJ563	56K	1	
R132,133		ERD10TJ223	22K	2	
R134		ERD10TJ103	10K	1	
R135		ERD10TJ332	3.3K	1	
R136,137		ERD10TJ223	22K	2	
R138		ERD10TJ221	220	1	
R139		ERD10TJ104	100K	1	
R140,141		ERD10TJ472	4.7K	2	
R142,143		ERD10TJ103	10K	2	
R144		ERD10TJ223	22K	1	
R145		ERD10TJ563	56K	1	
R146		ERD10TJ223	22K	1	
R147,148		ERD10TJ333	33K	2	
R149		ERD10TJ823	82K	1	
R150		ERD10TJ101	100	1	
R151		ERD10TJ473	47K	1	
R152		ERD10TJ562	5.6K	1	
R153		ERD10TJ474	470K	1	
R154		ERD10TJ223	22K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R155		ERD10TJ333	33K	1	
R156		ERD10TJ102	1K	1	
R157		ERD10TJ331	330	1	
R158		ERD10TJ333	33K	1	
R159		ERD10TJ274	270K	1	
R160		ERD10TJ684	680K	1	
R161		ERD10TJ272	2.7K	1	
R162		ERD10TJ472	4.7K	1	
R163		ERD10TJ333	33K	1	
R164		ERD10TJ274	270K	1	
R165		ERD10TJ684	680K	1	
R166-168		ERD10TJ333	33K	3	
R169		ERD10TJ104	100K	1	
R170		ERD10TJ103	10K	1	
R171		ERD10TJ683	68K	1	
R172		ERD10TJ152	1.5K	1	
R173		ERD10TJ124	120K	1	
R174		ERD10TJ332	3.3K	1	
R175		ERD10TJ563	56K	1	
R176		ERD10TJ103	10K	1	
R177		ERD10TJ563	56K	1	
R178		ERD10TJ223	22K	1	
R179		ERD10TJ103	10K	1	
R180,181		ERD10TJ563	56K	2	
R182		ERD10TJ123	12K	1	
R183		ERD10TJ223	22K	1	
R184		ERD10TJ393	39K	1	
R185		ERD10TJ221	220	1	
R186		ERD10TJ1C2	1K	1	
R187		ERD10TJ472	4.7K	1	
R188		ERD10TJ471	470	1	
R189,190		ERD10TJ152	1.5K	2	
R191		ERD10TJ102	1K	1	
R192		ERD10TJ122	1.2K	1	
R193		EVNK6AA00B52	Variable 500	1	
R194		ERD10TJ152	1.5K	1	
R195		ERD10TJ683	68K	1	
R197		ERD10TJ102	1K	1	
R198		ERD10TJ562	5.6K	1	
R199		ERD10TJ333	33K	1	
R200		ERD10TJ102	1K	1	
R201,202		ERD25VJ102	1/4W 1K	2	
R203		ERD10TJ102	1K	1	
R204		ERD10TJ101	100	1	
R205		ERD10TJ103	10K	1	
R206		ERD10TJ333	33K	1	
			Capacitors		
C1		ECEA1HS010	Electrolytic 50V 1	1	
C2		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C3		ECEA1CS100	Electrolytic 16V 10	1	
C4		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C5		ECEA1HS010	Electrolytic 50V 1	1	
C6		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C7,8		VCKT1E103MX	Ceramic 0.01	2	
C9,10		ECEA1ES4R7	Electrolytic 25V 4.7	2	
C11,12		VCKT1E103MX	Ceramic 0.01	2	
C13		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C14		ECEA1CS220	Electrolytic 16V 22	1	
C15		ECEA1HS010	Electrolytic 50V 1	1	
C16		ECEA1CS470	Electrolytic 16V 47	1	
C17,18		ECEA1HS010	Electrolytic 50V 1	2	
C19		ECEA1CS100	Electrolytic 16V 10	1	
C20		ECEA1CS470	Electrolytic 16V 47	1	
C21		ECEA1CS470	Electrolytic 16V 47	1	
C22		ECEA1HS010	Electrolytic 50V 1	1	
C23		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C24		ECEA1CS100	Electrolytic 16V 10	1	
C25		VCKT1E103MX	Ceramic 0.01	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C26		ECEA1CS100	Electrolytic 16V 10	1	
C27		ECEA0JS470	Electrolytic 6.3V 47	1	
C28		ECEA1HS010	Electrolytic 50V 1	1	
C29		ECEA1CS101	Electrolytic 16V 100	1	
C30		VCKA1E103MX	Ceramic 0.01	1	
C31		ECEA1CS101	Electrolytic 16V 100	1	
C32		ECQM1H682KZ	Myler 50V 0.0068	1	
C33		ECEA1HS010	Electrolytic 50V 1	1	
C35-37		ECEA50ZR1	Electrolytic 50V 0.1	3	
C38		ECEA50ZR1	Electrolytic 50V 0.1	1	
			Connectors		
P609		VJP0091	10P	1	
P610		VJP1069	12P	1	
P611		VJP0091	10P	1	
P613		VJP0090	5P	1	
P614		VJP0091	10P	1	
P615,616		VJP0089	3P	2	
P617,618		VJP0091	10P	2	
P619		VJP0089	3P	1	
P620		VJP0090	5P	1	
F1		VSG0003	Temperature Fuse	1	
			Miscellaneous		
		TEL312	GT Pin	2	
		VJH0096Z	Check Terminal	3	
		VGQ0103	Rotary Bush	2	
		VMA3776	Fuse Holder	1	
		VSC0395	Heat Sink	1	
			SYSTEM CONTROL III CIRCUIT		
			BOARD		
			Transistors		
Q1-14		2SD636		14	
			Diodes		
D1-7		MA150		7	
D9-22		MA150		14	
D24,25		MA150		2	
			Resistors		
R1		ERD10TJ473	47K	1	
R2		ERD10TJ562	5.6K	1	
R3		ERD10TJ473	47K	1	
R4,5		ERD10TJ103	10K	2	
R6		ERD10TJ473	47K	1	
R7		ERD10TJ683	68K	1	
R8		ERD10TJ223	22K	1	
R9		ERD10TJ473	47K	1	
R10		ERD10TJ103	10K	1	
R11		ERD10TJ473	47K	1	
R12		ERD10TJ223	22K	1	
R13		ERD10TJ473	47K	1	
R14		ERD10TJ103	10K	1	
R15		ERD10TJ472	4.7K	1	
R16		ERD10TJ103	10K	1	
R17		ERD10TJ683	68K	1	
R18		ERD10TJ223	22K	1	
R19		ERD10TJ473	47K	1	
R20		ERD10TJ562	5.6K	1	
R21		ERD10TJ473	47K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R22,23		ERD10TJ103	10K	2	
R24		ERD10TJ473	47K	1	
R25		ERD10TJ223	22K	1	
R26		ERD10TJ103	10K	1	
R27		ERD10TJ473	47K	1	
R28		ERD10TJ223	22K	1	
R29		ERD10TJ473	47K	1	
R30		ERD10TJ103	10K	1	
R31		ERD10TJ472	4.7K	1	
R32		ERD10TJ103	10K	1	
R33		ERD10TJ562	5.6K	1	
R34		ERD10TJ473	47K	1	
R35		ERD10TJ103	10K	1	
R36		ERD10TJ104	100K	1	
R37		ERD10TJ103	10K	1	
R38-41		ERD10TJ473	47K	4	
R42		ERD10TJ223	22K	1	
R43		ERD10TJ683	68K	1	
R44		ERD10TJ223	22K	1	
R45,46		ERD10TJ103	10K	2	
R47		ERD10TJ562	5.6K	1	
			Capacitors		
C1		ECEA1CS100	Electrolytic 16V 10	1	
C2,3		ECEA50ZR15	Electrolytic 50V 0.15	2	
C4		ECEA50ZR22	Electrolytic 50V 0.22	1	
			Coil		
L1		VLQ80W221K	Peaking 220μH	1	
			Connectors		
P621		VJP0091	10P	1	
P622,623		VJP1069	12P	2	
			SERVO CONTROL PRINTED		
			CIRCUIT BOARD		
			Integrated Circuits		
IC1		AN6344		1	
IC2		AN6811		1	
IC3		DN819		1	
IC4		AN6341		1	
IC5,6		DN819		2	
IC7,8		μPD4013C		2	
			Transistors		
Q1-6		2SD636		6	
Q7		2SB641		1	
Q8		2SD636		1	
Q9		2SB745		1	
Q10		2SD636		1	
Q11		2SB641		1	
Q12		2SC2497		1	
Q13		2SB641		1	
Q14		2SC2497		1	
Q15		2SB641		1	
Q16		2SC2497		1	
Q17		2SD636		1	
Q18		2SB642		1	
Q19		2SB641		1	
Q20-22		2SD636		3	
Q23		2SB641		1	
Q24		2SD636		1	
Q25		2SB641		1	
Q26,27		2SD636		2	
Q28		2SB641		1	
Q29-31		2SD636		3	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
Q32-36		2SB641		5	
Q37		2SD636		1	
Q38		2SB641		1	
			Diode		
D1		RD56EC	Zener	1	
D2-50		MA150		49	
			Resistors		
R1		ERD10TJ102	1K	1	
R2		ERD10TJ681	680	1	
R3		ERD10TJ821	820	1	
R4		EVNK6AA00B13	Variable 1K	1	
R5		ERD10TJ272	2.7K	1	
R6		ERD25TJ122	1/4W 1.2K	1	
R7		ERD10TJ683	68K	1	
R8		ERD10TJ183	18K	1	
R9		ERD10TJ682	6.8K	1	
R10		ERD10TJ333	33K	1	
R11		ERD10TJ392	3.9K	1	
R12		ERD10TJ100	10	1	
R13,14		ERD10TJ392	3.9K	2	
R15		ERD10TJ102	1K	1	
R16		ERD10TJ273	27K	1	
R17		ERD10TJ563	56K	1	
R18		ERD10TJ222	2.2K	1	
R19		ERD10TJ563	56K	1	
R20		ERD10TJ822	8.2K	1	
R21		ERD10TJ124	120K	1	
R22		ERD10TJ222	2.2K	1	
R23,24		ERD10TJ105	1M	2	
R25		EVNK6AA00B54	Variable 50K	1	
R26		ERD10TJ682	6.8K	1	
R27		EVNK6AA00B54	Variable 50K	1	
R28		ERD10TJ682	6.8K	1	
R29		EVNK6AA00B15	100K	1	
R30		ERD10TJ683	68K	1	
R31		ERD10TJ332	3.3K	1	
R32		ERD10TJ103	10K	1	
R33		ERD10TJ152	1.5K	1	
R34		ERD10TJ273	27K	1	
R35		ERD10TJ471	470	1	
R36		ERD10TJ153	15K	1	
R37		ERD10TJ471	470	1	
R38		ERD25TG683	1/4W ±2% 68K	1	
R39		ERD25TG562	1/4W ±2% 5.6K	1	
R40		ERD25TJ332	1/4W 3.3K	1	
R41		ERD10TJ331	330	1	
R42		ERD25TG152	1/4W ±2% 1.5K	1	
R43		ERD10TJ473	47K	1	
R44		ERD10TJ104	100K	1	
R45		ERD10TJ332	3.3K	1	
R46		ERC14GJ155	1/4W 1.5M	1	
R47		ERD10TJ562	5.6K	1	
R48		ERD10TJ123	12K	1	
R49		ERD10TJ102	1K	1	
R50		ERD10TJ563	56K	1	
R51		ERD10TJ392	3.9K	1	
R52		ERD25TG823	1/4W ±2% 82K	1	
R53		EVNK6AA00B54	Variable 50K	1	
R54		ERD25TG184	1/4W ±2% 180K	1	
R55		ERD10TJ103	10K	1	
R56		ERD10TJ822	8.2K	1	
R57		ERD10TJ104	100K	1	
R58		ERD10TJ333	33K	1	
R59		ERD10TJ223	22K	1	
R60		ERD10TJ103	10K	1	
R61		ERD10TJ681	680	1	
R62		ERD10TJ392	3.9K	1	
R63		ERD10TJ102	1K	1	
R64		ERD10TJ223	22K	1	
R65		ERX12ANJR82P	1/2W 0.82	1	
R66		ERD10TJ392	3.9K	1	
R67		ERD10TJ470	47	1	
R68		ERD10TJ223	22K	1	
R69		ERD10TJ681	680	1	
R70		ERD10TJ628	6.8K	1	
R71		ERD10TJ470	47	1	
R72		ERD10TJ223	22K	1	
R73		ERD10TJ682	6.8K	1	
R74		ERD10TJ470	47	1	
R75-77		ERD10TJ332	3.3K	3	
R78		ERD10TJ683	68K	1	
R79		ERD10TJ333	33K	1	
R80		ERD10TJ332	3.3K	1	
R81		ERD10TJ392	3.9K	1	
R82		EVNK6AA00B53	Variable 5K	1	
R83		ERD10TJ822	8.2K	1	
R84		ERD10TJ331	330	1	
R85		ERD10TJ330	33	1	
R86		ERD10TJ102	1K	1	
R87		ERD10TJ153	15K	1	
R88		ERD10TJ333	33K	1	
R89		ERD10TJ332	3.3K	1	
R90		ERD10TJ562	5.6K	1	
R91		ERD10TJ393	39K	1	
R92		ERD10TJ273	27K	1	
R93		ERD10TJ222	2.2K	1	
R94,95		ERD10TJ153	15K	2	
R96		ERD10TJ221	220	1	
R97		ERD10TJ153	15K	1	
R98,99		ERD10TJ333	33K	2	
R100		ERD10TJ222	2.2K	1	
R101		ERD10TJ223	22K	1	
R102		ERD10TJ103	10K	1	
R103		ERD10TJ223	22K	1	
R104		ERD10TJ333	33K	1	
R105		ERD10TJ223	22K	1	
R106		ERD10TJ184	180K	1	
R107		ERD10TJ273	27K	1	
R108		ERD10TJ103	10K	1	
R109		ERD10TJ152	1.5K	1	
R110		EVNK6AA00B15	Variable 100K	1	
R111		ERD10TJ473	47K	1	
R112		EVNK6AA00B15	Variable 100K	1	
R113		ERD10TJ153	15K	1	
R114		ERD10TJ683	68K	1	
R115		ERD25TG392	1/4W ±2% 3.9K	1	
R116		ERD25TG222	1/4W ±2% 2.2K	1	
R117		ERC14GK685	1/4W 6.8M	1	
R118,119		ERD10TJ271	270	2	
R120		ERD25TG821	1/4W ±2% 820	1	
R121		ERD10TJ683	68K	1	
R122		ERD10TJ682	6.8K	1	
R123		ERD25TG124	1/4W ±2% 120K	1	
R124		ERD25TG184	1/4W ±2% 180K	1	
R125		ERD25TJ393	1/4W 39K	1	
R126		EVNK6AA00B54	Variable 50K	1	
R127-129		ERD10TJ563	56K	3	
R130,131		ERD10TJ223	22K	2	
R132		ERD10TJ332	3.3K	1	
R133		ERD10TJ183	18K	1	
R134		ERD10TJ224	220K	1	
R135		ERD25TG154	1/4W ±2% 150K	1	
R136		ERD10TJ332	3.3K	1	
R137		ERD10TJ563	56K	1	
R138		ERD10TJ105	1M	1	
R139		ERD10TJ102	1K	1	
R140		ERD10TJ153	15K	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R141		ERD10TJ333	33K	1	
R142		ERD10TJ473	47K	1	
R143		ERD10TJ563	56K	1	
R144		ERD10TJ153	15K	1	
R145		ERD10TJ104	100K	1	
R146		ERD25TJ474	1/4W 470K	1	
R147		ERD10TJ153	15K	1	
R148,149		ERD10TJ103	10K	2	
R150		ERD10TJ473	47K	1	
R151		EVLV3AA00B15	Variable 100K	1	
R512		ERD10TJ272	2.7K	1	
R154,155		ERD10TJ103	10K	2	
R156		ERD25TJ102	1/4W 1K	1	
R157		ERD10TJ473	47K	1	
R158		EVNK6AA00B15	Variable 100K	1	
R159		ERD10TJ332	3.3K	1	
R160		ERD10TJ333	33K	1	
R161		ERD25TJ102	1/4W 1K	1	
R162		EVNK6AA00B15	Variable 100K	1	
R163		EVLV3AA00B15	Variable 100K	1	
R164		ERD10TJ153	15K	1	
R165		ERD10TJ562	5.6K	1	
R166		ERD10TJ103	10K	1	
R167		ERD10TJ334	330K	1	
R168		ERD10TJ563	56K	1	
R169		ERD10TJ223	22K	1	
R170		ERD10TJ333	33K	1	
R171		ERD10TJ153	15K	1	
R172		ERD25VJ102	1/4W 1K	1	
R173		ERD10TJ392	3.9K	1	
R174		ERD10TJ153	15K	1	
R175,176		ERD10TJ103	10K	1	
R177,178		ERD10TJ153	15K	1	
R179		ERD10TJ223	22K	1	
R180		ERD10TJ183	18K	1	
R181		ERD25TJ333	1/4W 33K	1	
			Capacitors		
C1		ECEA1CS220	Electrolytic 16V 22	1	
C2		ECEA1CS470	Electrolytic 16V 47	1	
C3		ECEA1CS470	Electrolytic 16V 47	1	
C4		ECQM1H223KZ	Myler 50V 0.022	1	
C5		ECEA1CS470	Electro.ytic 16V 47	1	
C6		ECEA1HS010	Electrolytic 50V 1	1	
C7		ECSF35ER33E	Tantalum 35V 0.33	1	
C8		ECEA1HS010	Electrolytic 50V 1	1	
C9		ECEA1HS010	Electrolytic 50V 1	1	
C10,11		ECQM1H683KZ	Myler 50V 0.068	2	
C12		ECQM1H223KZ	Myler 50V 0.022	1	
C13,14		ECQM1H104KZ	Myler 50V 0.1	2	
C15		ECEA1CS100	Electrolytic 16V 10	1	
C16		ECQM1H562KZ	Myler 50V 0.0056	1	
C17		ECEA50ZR68	Electrolytic 50V 0.68	1	
C18		ECEA16Z100	Electorlytic 16V 100	1	
C19		ECEA1CS221	Electrolytic 16V 220	1	
C20		ECEA50ZR1	Electrolytic 50V 0.1	1	
C21		ECEA1AS331	Electrolytic 10V 330	1	
C22		ECQM1H104KZ	Myler 50V 0.1	1	
C23		ECQV05154JZW	Myler 50V 0.15	1	
C24		ECQM1H124KZ	Myler 50V 0.12	1	
C25		ECQM1H683KZ	Myler 50V 0.068	1	
C26		ECEA1HS010	Electrolytic 50V 1	1	
C27		ECQM1H822KZ	Myler 50V 0.0082	1	
C28		ECEA50ZR1	Electrolytic 50V 0.1	1	
C29		ECEA1HS010	Electrolytic 50V 1	1	
C30		ECEA50ZR68	Electrolytic 50V 0.68	1	
C31		ECQM1H473KZ	Myler 50V 0.047	1	
C32		ECEA50ZR1	Electrolytic 50V 0.1	1	
C33		ECEA50N1	Electrolytic 50V 1	1	
C34		ECQM1H393KZ	Myler 50V 0.039	1	
C35		ECEA50N1	Electrolytic 50V 1	1	
C36		ECQM1H393KZ	Myler 50V 0.039	1	
C37		ECEA50N1	Electrolytic 50V 1	1	
C38		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C39		ECEA50ZR22	Electrolytic 50V 0.22	1	
C40		ECQM1H153KZ	Myler 50V 0.015	1	
C41		ECQM1H103KZ	Myler 50V 0.01	1	
C42		ECQM1H153KZ	Myler 50V 0.015	1	
C43		ECQM1H393KZ	Myler 50V 0.039	1	
C44		ECEA1CS100	Electrolytic 16V 10	1	
C45		ECQM1H472KZ	Myler 50V 0.0047	1	
C46		ECEA1CS220	Electrolytic 16V 22	1	
C47		ECQM1H393KZ	Myler 50V 0.039	1	
C48		ECEA1HS010	Electrolytic 50V 1	1	
C49		ECQM1H103KZ	Myler 50V 0.01	1	
C50		ECEA1HS010	Electrolytic 50V 1	1	
C51		ECEA1CS100	Electrolytic 16V 10	1	
C52		ECSF35ER33KE	Tantalum 35V 0.33	1	
C53,54		ECQM1H104KZ	Myler 50V 0.1	2	
C55		ECEA1CS470	Electrolytic 16V 47	1	
C56		ECEA1CS471	Electrolytic 16V 470	1	
C57		ECQM1H223KZ	Myler 50V 0.022	1	
C58		ECQM1H104KZ	Myler 50V 0.1	1	
C59		ECSF35ER33	Tantalum 35V 0.33	1	
C60		ECQM1H473KZ	Myler 50V 0.047	1	
C61		ECQM1H562KZ	Myler 50V 0.0056	1	
C62		ECQV05274JZ	Myler 50V 0.27	1	
C63		ECEA1HS010	Electrolytic 50V 1	1	
C64		ECQM1H682KZ	Myler 50V 0.0068	1	
C65		ECQM1H123KZ	Myler 50V 0.012	1	
C66		ECQM1H102KZ	Myler 50V 0.001	1	
C67		ECQM1H102KZ	Myler 50V 0.001	1	
C68		ECQM1H103KZ	Myler 50V 0.01	1	
C69		ECEA1CS100	Electrolytic 16V 10	1	
C70		ECEA1CS470	Electrolytic 16V 47	1	
C71		ECEA1CS221	Electrolytic 16V 220	1	
C72		ECQM1H273KZ	Myler 50V 0.027	1	
			Coil		
L1		VLQ80W102K	Peaking 1mH	1	
			Connectors		
P21		VJP0090	5P	1	
P22		VJP1069	12P	1	
P23		VJP0091	10P	1	
P24		VJP1069	12P	1	
P25		VJP0091	10P	1	
			Miscellaneous		
		VJH0096Z	Check Terminal	11	
		VJH23	Check Terminal	5	
		VMA3738	P. C. Board Support Angle	1	

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Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		SUB SERVO CONTROL		
		PRINTED CIRCUIT BOARD		
		Transistors		
Q1-4	2SD636		4	
Q5	2SB643		1	
Q6	2SD389		1	
Q7	2SD636		1	
Q8	2SB641		1	
Q9-12	2SD636		4	
		Diodes		
D1-7	MA150		7	
D8	10E1LF		1	
D9	RD56EC		1	
D10	VD1222		1	
D11,12	MA150		1	
		Resistors		
R1	ERD10TJ472	4.7K	1	
R2	ERD10TJ561	560	1	
R3	ERD10TJ104	100K	1	
R4	ERD10TJ273	27K	1	
R6	EVNK6AA00B54	Variable 50K	1	
R7	ERD10TJ563	56K	1	
R8	ERD10TJ104	100K	1	
R9	ERD10TJ333	33K	1	
R10	ERD10TJ393	39K	1	
R11	ERD10TJ334	330K	1	
R12	ERD10TJ152	1.5K	1	
R13	ERD10TJ182	1.8K	1	
R14	ERD10TJ221	220	1	
R15	ERD10TJ223	22K	1	
R16	ERD10TJ563	56K	1	
R17	ERD10TJ104	100K	1	
R18	ERD10TJ563	56K	1	
R19	ERD10TJ683	68K	1	
R20	ERD10TJ332	3.3K	1	
R21	ERD10TJ472	4.7K	1	
R22	ERD10TJ184	180K	1	
R23	ERD10TJ683	68K	1	
R24	ERD10TJ332	3.3K	1	
R25	EVNK6AA00B54	Variable 50K	1	
R28	ERD10TJ472	4.7K	1	
R29	ERD10TJ153	15K	1	
R30	ERD10TJ103	10K	1	
R31	ERD10TJ223	22K	1	
R32	ERD10TJ563	56K	1	
R33	ERD10TJ473	47K	1	
R34	ERD10TJ122	1.2K	1	
R35	ERD10TJ104	100K	1	
R36	ERD10TJ271	270	1	
R37	ERD10TJ563	56K	1	
R38	ERD10TJ223	22K	1	
R39	ERD10TJ562	5.6K	1	
		Capacitors		
C1	ECEA1HS010	Electrolytic 50V 1	1	
C2	ECEA1CS101	Electrolytic 16V 100	1	
C3	ECEA50ZR15	Electrolytic 50V 0.15	1	
C4	ECEA1CS100	Electrolytic 16V 10	1	
C5	ECQM1H823KZ	Myler 50V 0.082	1	
C6	ECQV05184JZ	Myler 50V 0.18	1	
C7	ECEA1CS100	Electrolytic 16V 10	1	
C8	ECQM1H103KZ	Myler 50V 0.01	1	
C9	ECQM1H333KZ	Myler 50V 0.033	1	
C10	ECQV05184JZ	Myler 50V 0.18	1	

Ref. No.	Part No.	Part Name & Description	Pcs / Set	Remarks
		Coil		
L1	VLQ80W221K	Peaking 220MH	1	
		Connectors		
P211, 212	VJP1069	12 P		
		VIDEO PRINTED CIRCUIT		
		BOARD		
		Integrated Circuits		
IC1	AN6300			
IC2	AN6320			
IC3	SN76670N			
IC4	AN6331			
		Transistors		
Q1	2SA886V		1	
Q2, 3	2SD636		2	
Q4	2SB641		1	
Q5-11	2SD636		7	
Q12	2SC2206		1	
Q13	2SD636		1	
Q14	2SB643		1	
Q15, 16	2SD638		2	
Q17, 18	2SC2266		2	
Q19	2SC2377		1	
Q20	2SC828		1	
Q21, 22	2SD636		2	
Q23	2SB641		1	
Q24	2SD636		1	
Q25	2SC2377		1	
Q26, 27	2SD636		2	
Q28	2SB641		1	
Q29	2SD636		1	
Q30	2SB641		1	
Q31, 32	2SD636		2	
Q33	2SB641		1	
Q34, 35	2SD636		2	
Q38	2SD636		1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
Q39		2SA886V		1	
Q40		2SD636		1	
			Diodes		
D1, 2		1SS16		2	
D3-6		MA150		4	
D7		0A90		1	
D8-13		MA150		7	
D14		RD62EB		1	
			Resistors		
R1		ERD10TJ102	1K	1	
R2		ERD10TJ122	1.2K	1	
R3		ER1010TJ103	10K	1	
R4		EVNK6AA00B53	Variable 5K	1	
R5		ERD10TJ124	120K	1	
R6		ERD10TJ332	3.3K	1	
R7		ERD10TJ472	4.7K	1	
R8		ERD10TJ102	1K	1	
R9		ERD10TJ561	560	1	
R10		ERD10TJ681	680	1	
R11		ERD10TJ151	150	1	
R12		ERD10TJ911	910	1	
R13		ERD10TJ122	1.2K	1	
R14		EVNK6AA00B53	Variable 5K	1	
R15		ERD10TJ272	2.7K	1	
R16		ERD10TJ332	3.3K	1	
R17		ERD10TJ152	1.5K	1	
R18		ERD10TJ561	560	1	
R19		ERD10TJ222	2.2K	1	
R20		ERD10TJ391	390	1	
R21, 22		ERD10TJ222	2.2K	2	
R23		ERD10TJ272	2.7K	1	
R24		ERD10TJ103	10K	1	
R25		EVNK6AA00B53	Variable 5K	1	
R26		ERD10TJ272	2.7K	1	
R27		ERD10TJ472	4.7K	1	
R28		ERD10TJ562	5.6K	1	
R29		EVNK6AA00B53	Variable 5K	1	
R30		ERD10TJ332	3.3K	1	
R31		EVNK6AA00B53	Variable 5K	1	
R32		ERD10TJ820	82	1	
R33, 34		ERD10TJ561	560	2	
R35		ERD10TJ223	22K	1	
R36		ERD10TJ103	10K	1	
R37		ERD10TJ222	2.2K	1	
R38		ERD10TJ103	10K	1	
R39, 40		ERD10TJ102	1K	2	
R41		ERD10TJ393	39K	1	
R42		ERD10TJ102	1K	1	
R43-45		ERD10TJ103	10K	3	
R46		ERD10TJ102	1K	1	
R47		EVNK6AA00B53	Variable 5K	1	
R48		ERD10TJ562	5.6K	1	
R49		ERD10TJ332	3.3K	1	
R50		ERD10TJ102	1K	1	
R51		ERD10TJ101	100	1	
R52		ERD10TJ152	1.5K	1	
R53		ERD10TJ183	18K	1	
R54		ERD10TJ4R7	4.7	1	
R55		ERD10TJ681	680	1	
R56		ERD10TJ182	1.8K	1	
R57, 58		ERD10TJ392	3.9K	2	
R59		ERD10TJ182	1.8K	1	
R60, 61		ERD25TJ470	1/4W 47	2	
R62		ERD10TJ100	10	1	
R63		ERD10TJ103	10K	1	
R64		ERD10TJ272	2.7K	1	
R65		ERD10TJ681	680	1	
R66		ERD10TJ182	1.8K	1	
R67		ERD10TJ100	10	1	
R68		ERD10TJ182	1.8K	1	
R69		ERD10TJ100	10	1	
R70, 71		ERD10TJ473	47K	2	
R72		ERD10TJ391	390	1	
R73		EVNK6AA00B13	Variable 1K	1	
R74		ERD10TJ822	8.2K	1	
R75		EVNK6AA00B23	Variable 2K	1	
R76		ERD10TJ472	4.7K	1	
R77		ERD10TJ822	8.2K	1	
R78		EVNK6AA00B13	Variable 1K	1	
R79		ERD10TJ391	390	1	
R80		EVNK6AA00B13	Variable 1K	1	
R81		ERD10TJ123	12K	1	
R82		ERD10TJ153	15K	1	
R83		ERD10TJ333	33K	1	
R84		ERD10TJ103	10K	1	
R85		ERD10TJ331	330	1	
R86		ERD10TJ680	68	1	
R87, 88		ERD10TJ102	1K	2	
R89		ERD10TJ222	2.2K	1	
R90, 91		ERD10TJ102	1K	2	
R92		ERD10TJ222	2.2K	1	
R93		ERD10TJ391	390	1	
R94		ERD10TJ271	270	1	
R95		ERD10TJ821	820	1	
R96		ERD10TJ222	2.2K	1	
R97-101		ERD10TJ102	1K	5	
R102		ERD10TJ473	47K	1	
R103		EVNK6AA00B54	Variable 50K	1	
R104		ERD10TJ102	1K	1	
R105		ERD10TJ222	2.2K	1	
R106		ERD10TJ102	1K	1	
R107		ERD25TJ333	1/4W 33K	1	
R108		ERD10TJ103	10K	1	
R109		ERD10TJ221	220	1	
R110		ERD10TJ561	560	1	
R111		ERD25TJ102	1/4W 1K	1	
R112		ERD10TJ392	3.9K	1	
R113		ERD25TJ221	1/4W 220	1	
R114		ERD10TJ222	2.2K	1	
R115		EVNK6AA00B24	Variable 20K	1	
R116		ERD10TJ823	82K	1	
R117		ERD10TJ152	1.5K	1	
R118		ERD10TJ330	33K	1	
R119		ERD10TJ121	120	1	
R120		ERD10TJ821	820	1	
R121		ERD10TJ103	10K	1	
R122		ERD10TJ102	1K	1	
R123		ERD10TJ331	330	1	
R124		ERD10TJ222	2.2K	1	
R125		ERD10TJ331	330	1	
R126, 127		ERD10TJ271	270	2	
R128		ERD10TJ273	27K	1	
R129		ERD10TJ183	18K	1	
R130		ERD10TJ271	270	1	
R131		ERD10TJ563	56K	1	
R132		ERD10TJ103	10K	1	
R133		ERD10TJ102	1K	1	
R134		ERD10TJ121	120	1	
R135		ERD10TJ102	1K	1	
R136		ERD10TJ222	2.2K	1	
R137		ERD10TJ821	820	1	
R138		ERD10TJ822	8.2K	1	
R139		ERD10TJ331	330	1	
R140		ERD10TJ182	1.8K	1	
R141		EVNK6AA00B23	Variable 2K	1	
R142		ERD25TJ563	1/4W 56K	1	
R143		ERD25TJ333	1/4W 33K	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R144		ERD10TJ122	1.2K	1	
R145		ERD10TJ153	15K	1	
R146		ERD10TJ122	1.2K	1	
R147		EVNK6AA00B53	Variable 5K	1	
R148		ERD10TJ221	220	1	
R149		ERD10TJ182	1.8K	1	
R150		ERD10TJ222	2.2K	1	
R151		ERD10TJ681	680	1	
R152		ERD10TJ472	4.7K	1	
R153		ERD10TJ392	3.9K	1	
R154		ERD10TJ102	1K	1	
R155		ERD10TJ681	680	1	
R156		ERD10TJ561	560	1	
R157		ERD10TJ391	390	1	
R158		ERD10TJ682	6.8K	1	
R159		ERD10TJ103	10K	1	
R160, 161		ERD10TJ333	33K	2	
R162		ERD10TJ473	47K	1	
R163		ERD25TJ473	1/4W 47K	1	
R164		ERD10TJ474	470K	1	
R165, 166		ERD10TJ560	56	2	
R167		ERD10TJ103	10K	1	
R168		ERD10TJ562	5.6K	2	
R169		ERD10TJ391	390	1	
R170		ERD10TJ560	56	1	
R171		ERD10TJ562	5.6K	1	
R172		ERD10TJ391	390	1	
R173		ERD10TJ103	10K	1	
R178		ERD10TJ471	470	1	
R180		ERD10TJ471	470	1	
R181, 182		ERD10TJ472	4.7K	2	
R183-186		ERD10TJ103	10K	4	
R187		EVNK6AA00B23	Variable 2K	1	
R188		ERD10TJ473	47K	1	
R189		ERD10TJ472	4.7K	1	
R190		ERD10TJ102	1K	1	
R191		ERD14FJ820	1/4W 82	1	
R192		ERD10TJ102	1K	1	
R193		ERD10TJ271	270	1	
R194		ERD10TJ473	47K	1	
			Thermistor		
TH1		ERTD2FHL102S		1	
			Capacitors		
C1		VCY25473KW	Semiconductor 25V 0.047	1	
C2		ECEA1CS220	Electolytic 25V 22	1	
C3		ECEA0JS470	Electrolytic 6V 47	1	
C4		VCY25473KW	Semiconductor 25V 0.047	1	
C5		ECEA6N47	Electrolytic 6V 47	1	
C6		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C7		ECEA1CS101	Electrolytic 16V 100	1	
C8		ECQM1H333KZ	Myler 50V 0.033	1	
C9		ECEA1CS221	Electrolytic 16V 220	1	
C10		ECCW1H121J	Ceramic 50V 120P	1	
C11		ECEA1HK100	Electrolytic 50V 10	1	
C12		ECEA1CS470	Electrolytic 16V 100	1	
C13		ECEA1AK470	Electrolytic 10V 47	2	
C15		ECEA6N47	Electrolytic 6V 47	1	
C16		ECEA1CS471	Electrolytic 16V 470	1	
C17		VCY25473KW	Semiconductor 25V 0.047	1	
C18		VCCA1H820J	Ceramic 50V 82P	7	
C19		VCKA1H151KB	Ceramic 50V 150P	1	
C20		ECEA25N4R7	Electrolytic 25V 4.7	1	
C21		VCCT1H680J	Ceramic 50V 68P	1	
C22		ECV1ZW50X44	Trimmer 1W 50PF	1	
C23		VCKA1E103NX	Ceramic 0.01	1	
C24		VCKT1E103NX	Ceramic 0.01	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C25		VCKT1H331KB	Ceramic 50V 330P	1	
C26		VCCT1H680J	Ceramic 50V 68P	1	
C27, 28		VCKT1E103NX	Ceramic 0.01	2	
C29		VCKA1E103NX	Ceramic 0.01	1	
C30		VCCT1H120J	Ceramic 50V 12P	1	
C31		VCKT1E103NX	Ceramic 0.01	1	
C32		VCCT1H220J	Ceramic 50V 22P	1	
C33		VCKA1E103NX	Ceramic 0.01	1	
C34		VCKT1E103NX	Ceramic 0.01	1	
C35		ECEA1CK470	Electrolytic 16V 47	1	
C36		VCY25473KW	Semiconductor 25V 0.047	1	
C37		ECQV05104JZ	Myler 0.1	1	
C38		VCKA1E103NX	Ceramic 0.01	1	
C39		ECEA1CS470	Electrolytic 16V 47	1	
C40		ECCW1H561J	Ceramic 50V 560P	1	
C41		ECEA1CS101	Electrolytic 16V 100	1	
C42		VCKT1E103NX	Ceramic 0.01	1	
C43		ECEA1CS101	Electrolytic 16V 100	1	
C44		VCY25473KW	Semiconductor 25V 0.047	1	
C45		ECEA1CS470	Electrolytic 16V 47	1	
C46		ECEA1CS100	Electrolytic 16V 10	1	
C47		ECV1ZW50X44	Trimmer 1W 50PF	1	
C48, 49		VCKA1E103NX	Ceramic 0.01	2	
C50		ECV1ZW50X44	Trimmer 1W 50PF	1	
C51, 52		ECEA1HS010	Electrolytic 50V 1	2	
C53		ECEA1CS100	Electrolytic 16V 10	1	
C54, 55		VCKT1E103NX	Ceramic 0.01	1	
C56		VCCT1H150J	Ceramic 50V 15P	1	
C57		ECQM1H562KZ	Myler 50V 0.0056	1	
C58		ECCW1H470J	Ceramic 50V 47P	1	
C59, 60		VCKT1E103NX	Ceramic 0.01	2	
C61		ECKW1H103PF	Ceramic 50V 0.01	1	
C62		ECCW1H470J	Ceramic 50V 47P	1	
C63		VCKT1E103NX	Ceramic 0.01	1	
C64		VCKT1H471KB	Ceramic 50V 470P	1	
C65		ECEA1CS470	Electrolytic 16V 47	1	
C66		VCCT1H180J	Ceramic 50V 18P	1	
C67		VCKA1E103NX	Ceramic 0.01	1	
C68		VCCT1H101J	Ceramic 50V 100P	1	
C69		ECCW1H431J	Ceramic 50V 430P	1	
C70		VCKT1E103NX	Ceramic 0.01	1	
C71		ECEA0JS470	Electrolytic 6V 47	1	
C72,		VCKT1E103NX	Ceramic 0.01	1	
C73		ECEA1CS221E	Electrolytic 16V 220	1	
C74,75		VCKT1E103NX	Ceramic 0.01	2	
C76		VCKA1E103NX	Ceramic 0.01	1	
C77		VCCA1H390J	Ceramic 50V 39P	1	
C78		VCKT1E103NX	Ceramic 0.01	1	
C79		VCCT1H330J	Ceramic 50V 33P	1	
C80,81		VCCT1H270J	Ceramic 50V 27P	2	
C82,83		VCKT1E103NX	Ceramic 0.01	2	
C84		ECKW1H103PF	Ceramic 50V 0.01	1	
C85		VCY25473KW	Semiconductor 25V 0.047	1	
C86		VCKT1E103NX	Ceramic 0.01	1	
C87		ECEA1CS101	Electrolytic 16V 100	1	
C88		VCKT1E103NX	Ceramic 0.01	2	
C90		VCCT1H121J	Ceramic 50V 120P	1	
C91		ECQM1H102JZ	Myler 50V ± 2% 0.001	1	
C92		VCKT1E103NX	Ceramic 0.01	1	
C93		ECEA1CS101	Electrolytic 16V 100	1	
C94		ECEA0JS470	Electrolytic 6V 47	1	
C95		VCCT1H680J	Ceramic 50V 68P	1	
C96		VCCT1H330J	Ceramic 50V 33P	1	
C97		VCCT1H220J	Ceramic 50V 22P	1	
C98		ECEA1CS100	Electrolytic 16V 10	1	
C99		VCCA1H560J	Ceramic 50V 56P	1	
C100		VCY25473KW	Semiconductor 25V 0.047	1	
C101		ECEA1CS221	Electrolytic 16V 220	1	
C102		ECEA0JS221	Electrolytic 6V 220	1	
C103		ECEA0JS470	Electrolytic 6V 47	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C104		ECEA1CS100	Electrolytic 16V 10	1	
C105		VCCT1H820J	Ceramic 50V 82P	1	
C106		ECEA1CS221	Electrolytic 16V 220	1	
C107		VCKT1E103NX	Ceramic 0.01	1	
C108		VCKT1H102KB	Ceramic 50V 0.01	1	
C109		ECEA1AS471	Electrolytic 10V 470	1	
C110		ECEA0JS471	Electrolytic 6V 470μ	1	
C111		VCY25473KW	Semiconductor 25V 0.047	1	
C112		ECQM1H182KZ	Myler 50V 0.0018	1	
C113		VCCT1H101J	Ceramic 50V 100P	1	
C114		ECEA1HS010	Electrolytic 50V 1	1	
C115		ECEA1AK470	Electrolytic 10V 47	1	
C116		ECEA0JS470	Electrolytic 6V 47	1	
C117		ECEA0JS471	Electrolytic 6V 470	1	
C118		ECEA1AS471	Electrolytic 10V 470	1	
C119		VCCT1H270J	Ceramic 50V 27P	1	
C120		ECEA1CS470	Electrolytic 16V 47	1	
			Coils		
L1-6		VLQ80W221K	Peaking 220μH	6	
L7		VLQ80W151K	Peaking 150μH	1	
L8		VLQ80W820K	Peaking 82μH	1	
L9		VLQ80W2R2K	Peaking 2.2μH	1	
L10		VLQ80W220K	Peaking 22μH	1	
L11		VLQ80W2R2K	Peaking 2.2μH	1	
L12		VLQ80W270K	Peaking 22μH	1	
L13		VLQ80W100K	Peaking 10μH	1	
L14,15		VLQ80W221K	Peaking 220μH	2	
L16		VLQ80W330K	Peaking 33μH	1	
L17		VLQ80W3R3K	Peaking 3.3μH	1	
L18		VLQ80W151K	Peaking 150μH	1	
L19		VLQ80W180K	Peaking 18μH	1	
L20		VLQ80W560K	Peaking 56μH	1	
L21		VLQ80W561K	Peaking 560μH	1	
L22		VLQ80W102K	Peaking 1mH	1	
L23,24		VLQ80W221K	Peaking 220μH	2	
L25		VLQ80W101K	Peaking 100μH	1	
L26		VLQ80W220K	Peaking 22μH	1	
L27,28		VLQ80W221K	Peaking 220μH	1	
L29		VLQ80W560K	Peaking 56μH	1	
L30,31		VLQ80W100K	Peaking 10μH	1	
			Delay Line		
DL1		VLD0012		1	
			Transformer		
T1		VLT0083		1	
			Filters		
FL1		VLF0056		1	
FL2		VLF0074		1	
FL3		VLF0082		1	
FL4		VLF0061		1	
FL5		VLF0069		1	
FL6		VLF0103		1	
FL7		VLF0089		1	
			Connectors		
P31		VJP0090	5P Connector	1	
P32,33		VJP0091	10P Connector	2	
P34		VJP1069	12P Connector	1	
P51		VJP0091	10P Connector	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Miscellaneous		
		VJH0096Z	Check Terminal	18	
		VJH23	Check Terminal	1	
		VSC0427	Shield Case A	1	
		VSC0428	Shield Case B	1	
		VSC0429	Shield Case C	1	
			COLOUR PRINTED CIRCUIT		
			BOARD		
			Integrated Circuits		
IC1		AN6360		1	
IC2		AN6362		1	
IC3		AN6371		1	
IC4		AN6342N		1	
IC5		AN236		1	
			Transistors		
Q1,2		2SC828		2	
Q3,4		2SC2206		2	
Q5		2SA886V		1	
Q6,7		2SD636		2	
Q8		2SA564		1	
Q9		2SC828		1	
Q10,11		2SA564		2	
Q12,13		2SC828		2	
			Diodes		
D1-3		MA150		3	
D6-10		MA150		5	
			Resistors		
R1		ERD10TJ823	82K	1	
R2		ERD10TJ473	47K	1	
R3		ERD10TJ123	12K	1	
R4		ERD10TJ102	1K	1	
R5		ERD10TJ122	1.2K	1	
R6		ERD10TJ102	1K	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R7		ERD10TJ684	680K	1	
R8		ERD10TJ222	2.2K	1	
R9		ERD10TJ822	8.2K	1	
R10		ERD10TJ391	390	1	
R11		EVNK6AA00B14	Variable 10K	1	
R12,13		ERD10TJ391	390	2	
R14		ERD10TJ562	5.6K	1	
R15		ERD10TJ273	27K	1	
R16		ERD10TJ102	1K	1	
R17		ERD10TJ331	330	1	
R18		ERD10TJ153	15K	1	
R19		ERD10TJ562	5.6K	1	
R20		ERD10TJ684	680K	1	
R21		ERD10TJ101	100	1	
R22		ERD10TJ102	1K	1	
R23,24		ERD10TJ122	1.2K	1	
R25,26		ERD10TJ102	1K	2	
R27		ERD10TJ561	560	1	
R28,29		ERD10TJ152	1.5K	2	
R30		ERD10TJ223	22K	1	
R31		ERD10TJ103	10K	1	
R32		ERD10TJ223	22K	1	
R33,34		ERD10TJ562	5.6K	2	
R35		ERD10TJ104	100K	1	
R36		ERD10TJ103	10K	1	
R37		ERD10TJ682	6.8K	1	
R38		ERD10TJ103	10K	1	
R39		ERD10TJ562	5.6K	1	
R40		ERD10TJ103	10K	1	
R41		ERD10TJ562	5.6K	1	
R42		ERD10TJ222	2.2K	1	
R43		ERD25TJ681	1/4W 680	1	
R44		EVNK6AA00B52	Variable 500	1	
R45		ERD10TJ472	4.7K	1	
R46		ERD10TJ272	2.7K	1	
R47		ERD10TJ682	6.8K	1	
R48		ERD10TJ392	3.9K	1	
R49		ERD10TJ182	1.8K	1	
R50		ERD10TJ272	2.7K	1	
R51		ERD10TJ222	2.2K	1	
R52		ERD10TJ394	390K	1	
R53		ERD10TJ102	1K	1	
R54		ERD10TJ222	2.2K	1	
R55		ERD10TJ274	270K	1	
R56		ERD10TJ332	3.3K	1	
R57		ERD10TJ153	15K	1	
R58		ERD10TJ393	39K	1	
R59		ERD10TJ123	12K	1	
R60		ERD10TJ101	100	1	
R61		ERD10TJ6R8	6.8	1	
R62		ERD10TJ471	470	1	
R63		ERD10TJ152	1.5K	1	
R64		ERD10TJ392	3.9K	1	
R65		ERD10TJ683	68K	1	
R66		ERD10TJ682	6.8K	1	
R67		ERD10TJ560	56	1	
R68		ERD10TJ682	6.8K	1	
R69		ERD10TJ152	1.5K	1	
R70		ERD10TJ223	22K	1	
R71		EVNK6AA00B54	Variable 50K	1	
R72		ERD10TJ392	3.9K	1	
R73		ERD10TJ472	4.7K	1	
R74		ERD10TJ102	1K	1	
R75		ERD10TJ152	1.5K	1	
R76		ERD10TJ331	330	1	
R77		ERD10TJ153	15K	1	
R78		ERD10TJ393	39K	1	
R79		ERD10TJ153	15K	1	
R80		ERD10TJ333	33K	1	
R81		ERD10TJ103	10K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R82		ERD10TJ682	6.8K	1	
R83,84		ERD10TJ391	390	1	
R85		ERD10TJ102	1K	1	
			Capacitors		
C1		ECCW1H390J	Ceramic 50V 39P	1	
C2		ECKW1H103PF	Ceramic 50V 0.01	1	
C3		ECEA1HS2R2	Electrolytic 50V 2.2	1	
C4		ECKD1H103PF	Ceramic 50V 0.01	1	
C5,6		ECKW1H103PF	Ceramic 50V 0.01	2	
C7		ECQV05104JZ	Myler 50V 0.1	1	
C8-11		ECKW1H103PF	Ceramic 50V 0.01	4	
C12		ECEA1CS470	Electrolytic 16V 47	1	
C13		ECKW1H103PF	Ceramic 50V 0.01	1	
C14		ECKD1H681KB	Ceramic 50V 680P	1	
C15		ECKD1H103PF	Ceramic 50V 0.01	1	
C16		ECCW1H101JC	Ceramic 50V 100P	1	
C17		ECCW1H121JC	Ceramic 50V 120P	1	
C18		ECV1ZW20X44	Trimmer 20pF	1	
C19		ECCW1H150JC	Ceramic 50V 15P	1	
C20		ECKW1H103PF	Ceramic 50V 0.01	1	
C21		ECEA1CS470	Electrolytic 16V 47	1	
C22,23		ECKW1H103PF	Ceramic 50V 0.01	2	
C24		ECEA1HS010	Electrolytic 50V 1	1	
C25		ECQM1H472KZ	Myler 50V 0.0047	1	
C26		VCKW1H821JS	Ceramic 50V 820P	1	
C27,28		ECEA1CS470	Electrolytic 16V 47	2	
C29		ECEA1HS010	Electrolytic 50V 1	1	
C30		ECQV050104JZ	Myler 50V 0.1	1	
C31		ECQM1H472KZ	Myelr 50V 0.0047	1	
C32		ECEA50N1	Electrolytic 50V 1	1	
C33		ECQM1H122KZ	Myler 50V 0.0012	1	
C34		ECKD1H561KB	Ceramic 50V 560P	1	
C35		ECEA1CS100	Electrolytic 16V 10	1	
C36		ECQM1H183KZ	Myler 50V 0.018	1	
C37		ECKW1H221KB	Ceramic 50V 220P	1	
C38		ECKD1H151KB	Ceramic 50V 150P	1	
C39		ECKD1H821KB	Ceramic 50V 820P	1	
C40		ECCD1H820K	Ceramic 50V 82P	1	
C41		ECKW1H471KB	Ceramic 50V 470P	1	
C42		ECKW1H103PF	Ceramic 50V 0.01	1	
C43		ECEA1HK100	Electrolytic 50V 10	1	
C44		ECKW1H103PF	Ceramic 50V 0.01	1	
C45		ECCW1H040DC	Ceramic 50V 4P	1	
C46		ECV1ZW50X44	Trimmer 1W 50pF	1	
C47		ECCW1H050DC	Ceramic 50V 5P	1	
C48		ECEA1CS470	Electrolytic 16V 47	1	
C49		ECKR1H103PF	Ceramic 50V 0.01	1	
C50		ECKW1H103PF	Ceramic 50V 0.01	1	
C51		ECKD1H103PF	Ceramic 50V 0.01	1	
C52		ECKW1H103PF	Ceramic 50V 0.01	1	
C53		ECCW1H220JC	Ceramic 50V 22P	1	
C54		ECKD1H103PF	Ceramic 50V 0.01	1	
C55		ECEA1HS2R2	Ceramic 50V 2.2	1	
C56		ECQM1H273KZ	Myler 50V 0.027	1	
C57		ECKW1H103PF	Ceramic 50V 0.01	1	
C58		ECEA1CS470	Electrolytic 16V 47	1	
C59		ECQV05104JZ	Myler 50V 0.1	1	
C60		ECKD1H151KB	Ceramic 50V 150P	1	
C61		ECKW1H103PF	Ceramic 50V 0.01	1	
C62		ECKD1H391KB	Ceramic 50V 390P	1	
C63		ECKW1H103PF	Ceramic 50V 0.01	1	
C64		ECCW1H270JC	Ceramic 50V 27P	1	
C65		ECQM1H222KZ	Myler 50V 0.0022	1	
C66		ECEA1CS100	Electrolytic 16V 10	1	
C67		ECKW1H103PF	Ceramic 50V 0.01	1	
C68,69		ECEA0JS470	Electrolytic 6.3V 47	2	
C70		ECCW1H101J	Ceramic 50V 100P	1	
C71		ECCW1H390JU	Ceramic 50V 39P	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C72		ECCW1H470JU	Ceramic 50V 47P	1	
C73		ECCW1H150JU	Ceramic 50V 15P	1	
C74		ECEA0JS470	Electrolytic 6.3V 47	1	
C75		ECEA50ZR1E	Electrolytic 50V 0.1	1	
C76		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C77		ECQM1H222KZ	Myler 50V 0.0022	1	
C78		ECQV05104JZ	Myler 50V 0.1	1	
C79		ECCR1H820K	Ceramic 50V 82P	1	
C80		ECEA1CSS471	Electrolytic 16V 470	1	
			Coils		
L1		VLQ80W330K	Peaking 33μH	1	
L2,3		VLQ80W221K	Peaking 220μH	2	
L4		VLQEL06F100	Peaking 10μH	1	
L5		VLQEL06F8R2	Peaking 8.2μH	1	
L6		VLQ80W221K	Peaking 220μH	1	
L7		VLQ80W560K	Peaking 56μH	1	
L8		VLQ80W470K	Peaking 47μH	1	
L9,10		VLQ80W221K	Peaking 220μH	2	
L11		VLQ80W3R3K	Peaking 3.3μH	1	
L12		VLQ80W390K	Peaking 39μH	1	
L13		VLQ02F682K	Peaking 6.8M	1	
L14		VLQ80W681K	Peaking 680μH	1	
L15		VLQ24F102K25	Peaking 1mH	1	
			Filters		
FL1		VLF0073		1	
FL2		VLF6		1	
FL3		VLF0058		1	
FL4		VLF0059		1	
			Delay Line		
DL1		VLD0014		1	
			Crystals		
X1		VSX0066		1	
X2		VSX0069		1	
X3		VSX0068		1	
			Connectors		
P81,82		VJP0091	10P	2	
P83		VJP0089	3P	1	
			Miscellaneous		
		VJH0096Z	Check Terminal	15	
		VJH23	Check Terminal	2	
		VSC0423	Heat Sink	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			AUDIO PRINTED CIRCUIT		
			BOARD		
			Integrated Circuits		
IC1,2		AN262		2	
			Transistors		
Q1		2SD661		1	
Q2,3		2SD636		2	
Q4		2SB745		1	
Q5		2SD661		1	
Q6-10		2SD636		5	
Q11		2SD638		1	
Q12		2SD636		1	
Q13		2SD661		1	
Q14		2SD636		1	
Q16-18		2SD636		3	
Q19		2SB745		1	
Q20		2SD661		1	
Q21-24		2SD636		4	
Q25		2SD638		1	
Q26-31		2SD636		6	
Q32		2SA683		1	
Q33		2SD636		1	
Q34		2SB643		1	
Q35,36		2SD639		2	
Q37,38		2SD636		2	
Q41,42		2SD636		2	
			Diodes		
D1,2		MA150		2	
D4,5		MA150		2	
D6,7		OA90		2	
D9-12		MA150		4	
D13,14		OA90		2	
D15-19		MA150		5	
D21,22		MA150		2	
D24		MA150		1	
			Resistors		
R1		ERD10TJ274	270K	1	
R2		ERD10TJ103	10K	1	
R3		ERD25VJ124	1/4W 120K	1	
R4		ERD25VJ472	1/4W 4.7K	1	
R5		ERD25VJ121	1/4W 120	1	
R6-8		ERD10TJ103	10K	3	
R9		ERD25TJ153	1/4W 15K	1	
R10		ERD10TJ273	27K	1	
R11		ERD10TJ683	68K	1	
R12		ERD25VJ103	1/4W 10K	1	
R13,14		ERD10TJ103	10K	2	
R15,16		ERD25VJ103	1/4W 10K	2	
R17,18		ERD25VJ471	1/4W 470	2	
R20		ERD10TJ474	470K	1	
R21		ERD10TJ562	5.6K	1	
R22		ERD10TJ474	470K	1	
R23		ERD10TJ183	18K	1	
R24		ERD10TJ153	15K	1	
R25		ERD10TJ560	56	1	
R26		ERD10TJ123	12K	1	
R28		ERD10TJ153	15K	1	
R29		ERD10TJ102	1K	1	
R30		ERD10TJ184	180K	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R31		EVNK6AA00B53	Variable 5K	1	
R32		EVNK6AA00B24	Variable 20K	1	
R33		ERD10TJ103	10K	1	
R34		ERD10TJ222	2.2K	1	
R35		ERD10TJ822	8.2K	1	
R36		ERD10TJ272	2.7K	1	
R41,42		ERD10TJ223	22K	2	
R43,44		ERD25VJ333	1/4W 33K	2	
R45		ERD10TJ103	10K	1	
R46		ERD10TJ471	470	1	
R47		ERD10TJ334	330K	1	
R48		ERD10TJ102	1K	1	
R49		ERD10TJ182	1.8K	1	
R50		ERD10TJ122	1.2K	1	
R52		ERD10TJ561	560	1	
R53		ERQ14AJ560	1/4W 56	1	
R54		ERD10TJ223	22K	1	
R55		ERD10TJ332	3.3K	1	
R56		ERD10TJ473	47K	1	
R57		ERD10TJ103	10K	1	
R58		ERD10TJ222	2.2K	1	
R59		ERD10TJ154	150K	1	
R60		ERD10TJ473	47K	1	
R61		ERD10TJ124	120K	1	
R62		ERD10TJ473	47K	1	
R63		ERD25VJ332	1/4W 3.3K	1	
R64		ERD10TJ681	680	1	
R65,66		ERD10TJ102	1K	1	
R67		ERD10TJ391	390	1	
R68		EVNK6AA00B54	Variable 50K	1	
R69		ERD10TJ153	15K	1	
R70		ERD10TJ823	82K	1	
R71		ERD10TJ152	1.5K	1	
R72		EVNK6AA00B53	Variable 5K	1	
R73		ERD10TJ274	270K	1	
R74		ERD10TJ124	120K	1	
R75		ERD10TJ102	10K	1	
R76		ERD10TJ472	4.7K	1	
R77		ERD10TJ121	120	1	
R78-80		ERD10TJ103	10K	3	
R83		ERD10TJ153	15K	1	
R84		ERD10TJ273	27K	1	
R85-87		ERD10TJ103	10K	3	
R88		ERD10TJ683	68K	1	
R89		ERD10TJ332	3.3K	1	
R90		ERD10TJ822	8.2K	1	
R91,92		ERD25TJ223	1/4W 22K	2	
R93,94		ERD10TJ333	33K	2	
R95		ERD10TJ103	10K	1	
R96		ERD10TJ222	2.2K	1	
R97		ERD25VJ272	1/4W 2.7K	1	
R98		ERD10TJ104	100K	1	
R100		ERD10TJ474	470K	1	
R101		ERD10TJ562	5.6K	1	
R102		ERD10TJ123	12K	1	
R103		ERD10TJ153	15K	1	
R104		ERD10TJ474	470K	1	
R105		ERD10TJ183	18K	1	
R106		ERD10TJ560	56	1	
R108		ERD10TJ153	15K	1	
R109		ERD10TJ102	1K	1	
R110		ERD10TJ184	180K	1	
R111		EVNK6AA00B53	Variable 5K	1	
R112		EVNK6AA00B24	Variable 20K	1	
R113		ERD10TJ103	10K	1	
R121		ERD10TJ334	330K	1	
R122		ERD10TJ561	560	1	
R123		ERQ14AJ560	1/4W 56	1	
R124		ERD10TJ102	1K	1	
R125		ERD10TJ222	2.2K	1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R126		ERD10TJ122	1/8W 1.2K	1	
R128		ERD10TJ332	1/8W 3.3K	1	
R130		ERD10TJ223	1/8W 22K	1	
R131		ERD10TJ473	1/8W 47K	1	
R132		ERD10TJ103	1/8W 10K	1	
R133		EVNK6AA00B53	Variable 5K	1	
R134		ERD10TJ224	1/8W 220K	1	
R135,136		ERD10TJ103	1/8W 10K	2	
R137		ERD10TJ222	1/8W 2.2K	1	
R138		ERD10TJ154	1/8W 150K	1	
R139		ERD10TJ473	1/8W 47K	1	
R140		ERD10TJ124	1/8W 120K	1	
R141		ERD10TJ473	1/8W 47K	1	
R142		ERD10TJ332	1/8W 3.3K	1	
R143		ERD10TJ681	1/8W 680	1	
R144,145		ERD10TJ102	1/8W 1K	2	
R146		ERD10TJ391	1/8W 390	1	
R147		EVNK6AA00B54	Variable 50K	1	
R148		ERD10TJ153	1/8W 15K	1	
R149		ERD10TJ823	1/8W 82K	1	
R150		ERD10TJ152	1/8W 1.5K	1	
R151		EVNK6AA00B53	Variable 5K	1	
R157		ERD25TJ223	22K	1	
R158		ERD10TJ223	1/8W 22K	1	
R159		ERD25TJ563	56K	1	
R160		ERD10TJ223	1/8W 22K	1	
R161		ERD10TJ103	1/8W 10K	1	
R162		ERD25VJ103	10K	1	
R163		ERD25VJ332	3.3K	1	
R164,R165		ERD10TJ563	1/8W 56K	2	
R166		ERD10TJ222	1/8W 2.2K	1	
R167		ERD10TJ123	1/8W 12K	1	
R168		ERD25TJ4R7	4.7	1	
R169		ERD10TJ393	1/8W 39K	1	
R170		ERD10TJ332	1/8W 3.3K	1	
R171		ERD10TJ223	22K	1	
R172		ERD10TJ563	56K	1	
R173		ERD10TJ222	2.2K	1	
R174		ERD10TJ223	22K	1	
R175-177		ERD10TJ563	56K	3	
R178		ERD10TJ222	2.2K	1	
R179		ERD10TJ223	22K	1	
R180		ERD25TJ563	1/4W 56K	1	
R181		ERD10TJ222	2.2K	1	
R182		ERD10TJ332	3.3K	1	
R183		ERD10TJ471	470	1	
R184,185		ERD10TJ681	680	2	
R189		ERD10TJ223	22K	1	
R192		ERD25TJ221	1/4W 220	1	
R193,194		ERD25VJ123	1/4W 12K	1	
R51,127		ERD10TJ220)	22	2	
			Capacitors		
C1,2		ECEA1HS010	Electrolytic 50V 1	2	
C3		ECEADJS470	Electrolytic 6.3V 47	1	
C4		ECKW1H681KB	Ceramic 50V 680P	1	
C6		ECEA0JS330	Electrolytic 6.3V 33	1	
C7		ECEA1CS100	Electrolytic 16V 10	1	
C9		ECEA0JS101	Electrolytic 6.3V 100	1	
C10		ECEA1CS100	Electrolytic 16V 10	1	
C11		ECEA0JS101	Electrolytic 6.3V 100	1	
C12		ECQM1H333KZ	Myler 50V 0.033	1	
C13		ECEA1CS470	Electrolytic 16V 47	1	
C16		ECEA50ZR1	Electrolytic 50V 0.1	1	
C19		ECEA50ZR1	Electrolytic 50V 0.1	1	
C21,22		ECEA1HS010	Electrolytic 50V 1	2	
C23		ECEA0JS330	Electrolytic 6.3V 33	1	
C24		ECEA1CS100	Electrolytic 16V 10	1	
C25		ECEA0JS470	Electrolytic 6.3V 47	1	
C26,27		ECEA1CS100	Electrolytic 16V 10	2	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
C28		ECEA1CS470	Electrolytic 16V 47	1	
C29		ECKW1H103PF	Ceramic 50V 0.01	1	
C30		ECEA50ZR47	Electrolytic 50V 0.47	1	
C31		ECKW1H681KB	Ceramic 50V 680P	1	
C32		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C34,35		ECEA1CS100	Electrolytic 16V 10	2	
C36		ECQV05124JZ	Myler 50V 0.12	1	
C37		ECEA1CS221	Electrolytic 16V 220	1	
C38		ECEA1CS100	Electrolytic 16V 10	1	
C39		ECEA50ZR22	Electrolytic 50V 0.22	1	
C40,41		ECEA1CS100	Electrolytic 16V 10	2	
C42		ECEA50ZR1	Electrolytic 50V 0.1	1	
C43		ECCD1H270	Ceramic 50V 27P	1	
C44		ECEA0JS330	Electrolytic 63V 33	1	
C46-49		ECEA1CS100	Electrolytic 16V 10	4	
C50		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C51		ECCW1H560J	Ceramic 50V 56P	1	
C52		ECEA1HS010	Electrolytic 50V 1	1	
C53		ECCW1H560J	Ceramic 50V 56P	1	
C54		ECEA1HS010	Electrolytic 50V 1	1	
C55		ECEADJS470	Electrolytic 6.3V 47	1	
C56		ECKW1H681KB	Ceramic 50V 680P	1	
C57		ECEA50ZR1	Electrolytic 50V 0.1	1	
C58		ECEA0JS101	Electrolytic 6.3V 100	1	
C59,60		ECEA1CS100	Electrolytic 16V 10	2	
C61		ECEA0JS101	Electrolytic 6.3V 100	1	
C62		ECQM1H333KZ	Myler 50V 0.033	1	
C63		ECEA1CS470	Electrolytic 16V 47	1	
C64,65		ECEA1ES4R7	Electrolytic 25V 4.7	2	
C72		ECKR1H103PF	Ceramic 50V 0.01	1	
C74		ECQM1H472KZ	Myler 50V 0.0047	1	
C75		ECQF6122KZ	Myler 630V 0.0012	1	
C76,77		VCV0001	Trimmer 70P	2	
C78		ECEA0JS470	Electrolytic 6.3V 47	1	
C79		ECEA1CS100	Electrolytic 16V 10	1	
C80		ECEA1CS100	Electrolytic 16V 10	1	
C81		ECEA1CS470	Electrolytic 16V 47	1	
C82		ECEA50ZR47	Electrolytic 50V 0.47	1	
C83		ECKW1H681KB	Ceramic 50V 680P	1	
C84		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C87,87		ECEA1CS100	Electrolytic 16V 10	2	
C88		ECQV05124JZ	Myler 50V 0.12	1	
C89		ECEA1CS221	Electrolytic 16V 220	1	
C90		ECEA1CS100	Electrolytic 16V 10	1	
C91		ECEA50ZR22	Electrolytic 50V 0.22	1	
C92		ECEA1CS100	Electrolytic 16V 10	1	
C93		ECQM1H332KZ	Myler 50V 0.0033	1	
C94		ECEA1CS100	Electrolytic 16V 10	1	
C96		ECCD1H270J	Ceramic 50V 27P	1	
C97		ECEA0JS330	Electrolytic 6.3V 33	1	
C99		ECEA1CS100	Electrolytic 16V 10	1	
C100-102		ECEA1CS100	Electrolytic 16V 10	1	
C103		ECEA1ES4R7	Electrolytic 25V 4.7	1	
C106		ECEA0JS330	Electrolytic 6.3V 33	1	
C107		ECEA1CS101	Electrolytic 16V 100	1	
C108		ECQM1H472KZ	Myler 50V 0.0047	1	
C113		ECEA1CS220	Electrolytic 16V 22	1	
C117,118		ECEA1CS100	Electrolytic 16V 10	2	
			Coils		
L2		VLQ80W222K	Peaking 2.2mH	1	
L3		VLQ80W102K	Peaking 1mH	1	
L5		VLQ80W222K	Peaking 2.2mH	1	
L6,7		VLQ80W102K	Peaking 1mH	2	
L8		VLT0089		1	

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Transformers		
T1,2		QLT2D10A		2	
T3		VLT0090A		1	
			Relays		
K1,2		VSY0106		2	
K3		VSY224		1	
			Connectors		
P41-43		VJP0091	10P	3	
P44,45		VJP0089	3P	2	
P46-49		VJP0091	10P	4	
			Miscellaneous		
		VSC430	Audio Shield Plate, A	1	
		VSC431	Audio Shield Plate, B	1	
		VSC432	Audio Shield Plate, C	1	
		VSC449	Audio Shield Plate, D	1	
			NOISE REDUCTION PRINTED		
			CIRCUIT BOARD		
			Integrated Circuits		
IC1,2		NE646B		2	
IC3		µPD4066C		1	
			Transistors		
Q1,2		2SD636		2	
			Resistors		
R1		ERD25TJ102	1/4W 1K	1	
R2		ERD25TJ274	1/4W 270K	1	
R3		ERD25TJ184	1/4W 180K	1	
R4		ERD25TJ102	1/4W 1K	1	
R5		ERD25TJ332	1/4W 3.3K	1	
R6		ERD25TJ473	1/4W 47K	1	
R7		ERD25TJ181	1/4W 180	1	
R8		ERD25TJ105	1/4W 1M	1	
R9		ERD25TJ102	1/4W 1K	1	
R10		ERD25TJ274	1/4W 270K	1	
R11		ERD25TJ184	1/4W 180K	1	
R12		ERD25TJ102	1/4W 1K	1	
R13		ERD25TJ332	1/4W 3.3K	1	
R14		ERD25TJ473	1/4W 47K	1	
R15		ERD25TJ181	1/4W 180	1	
R16		ERD25TJ105	1/4W 1M	1	
R17		ERD25TJ102	1/4W 1K	1	
R18-20		ERD25TJ103	1/4W 10K	3	
R21		ERD25TJ563	1/4W 56K	1	
R22		ERD25TJ223	1/4W 22K	1	
R23		ERD25TJ103	1/4W 10K	1	

NV 8200 (150)

μPD4063C
4 BIT MAGNITUDE COMPARATOR

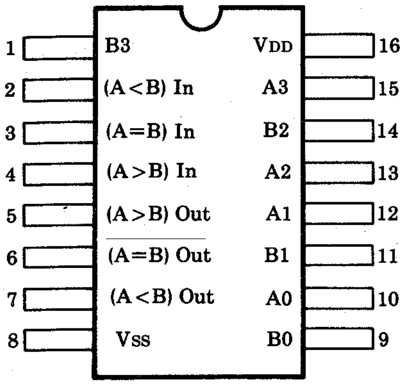
DESCRIPTION

The μPD4063 is a 4-bit magnitude comparator designed for use in computer and logic applications that require the comparison of two 4-bit words. This logic circuit determines whether one 4-bit word (Binary or BCD) is "less than", "equal to", or "greater than" a second 4-bit word.

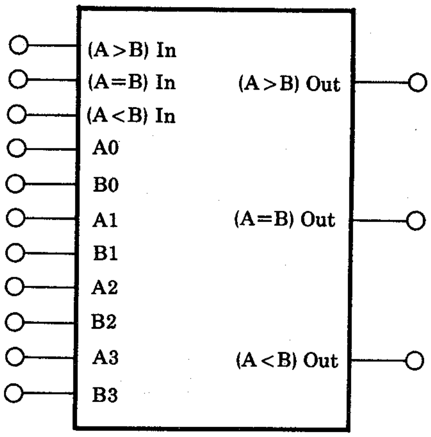
The μPD4063 has eight comparing inputs (A3, B3, through A0, B0), three outputs (A<B, A=B, A>B) and three cascading inputs (A<B, A=B, A>B) that permit systems designes to expand the comparator function to 8, 12, 16...4N bits. When a single μPD4063 is used, the cascading inputs are connected as follows: (A<B)=low, (A=B)=high, (A>B)=low.

For words longer than 4 bits, μPD4063 devices may be cascaded by connecting the outputs of the less-significant comparator to the corresponding cascading inputs of the more significant comparator. Cascading inputs (A<B, A=B and A>B) on the least significant comparator are connected to a low, a high, and a low level, respectively.

PIN ASSIGNMENT



BLOCK DIAGRAM



TRUTH TABLE

INPUT							OUTPUT		
COMPARING				CASCADING					
A3, B3	A2, B2	A1, B1	A0, B0	A<B	A=B	A>B	A<B	A=B	A>B
A3>B3	X	X	X	X	X	X	0	0	1
A3=B3	A2>B2	X	X	X	X	X	0	0	1
A3=B3	A2=B2	A1>B1	X	X	X	X	0	0	1
A3=B3	A2=B2	A1=B1	A0>B0	X	X	X	0	0	1
A3=B3	A2=B2	A1=B1	A0=B0	0	0	1	0	0	1
A3=B3	A2=B2	A1=B1	A0=B0	0	1	0	0	1	0
A3=B3	A2=B2	A1=B1	A0=B0	1	0	0	1	0	0
A3=B3	A2=B2	A1=B1	A0<B0	X	X	X	1	0	0
A3=B3	A2=B2	A1<B1	X	X	X	X	1	0	0
A3=B3	A2<B2	X	X	X	X	X	1	0	0
A3<B3	X	X	X	X	X	X	1	0	0

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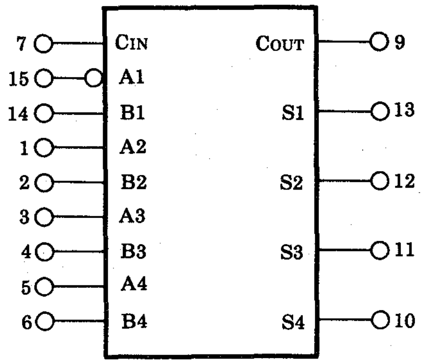
TC4506BP
NBCD ADDER

BLOCK DIAGRAM

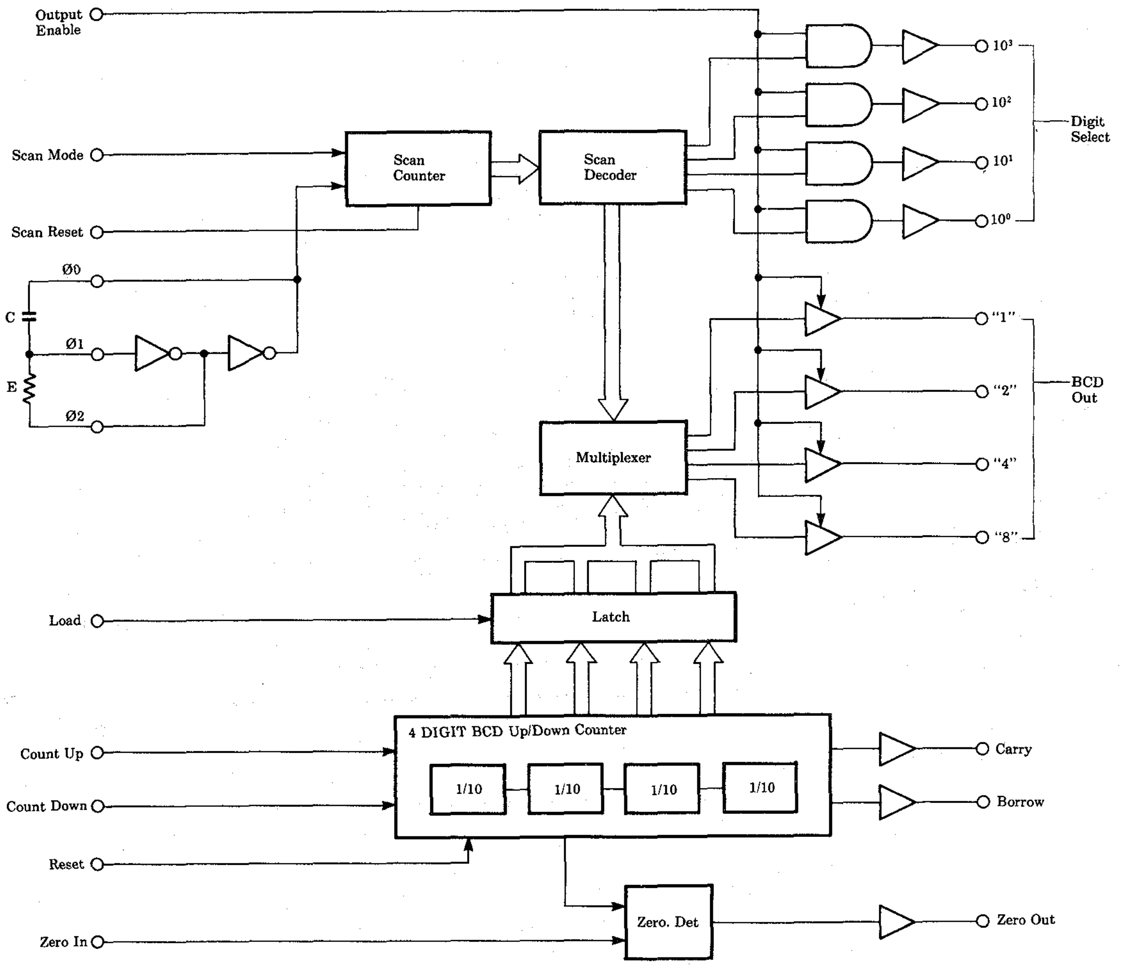

7
CIN
15
A1
14
B1
1
A2
2
B2
3
A3
4
B3
5
A4
6
B4
COUT
9
S1
13
S2
12
S3
11
S4
10

TRUTH TABLE

INPUTS									OUTPUTS				
A4	A3	A2	A1	B4	B3	B2	B1	CIN	B4	B3	B2	B1	COUT
L	L	L	L	L	L	L	L	L	L	L	L	L	L
L	L	L	L	L	L	L	L	H	L	L	L	H	L
L	H	L	H	L	L	H	L	L	L	H	H	H	L
L	H	L	L	L	L	H	H	H	H	L	L	L	L
L	H	H	L	L	H	L	H	L	L	L	L	H	H
L	L	H	H	H	L	L	L	H	L	L	H	L	H
H	L	L	H	L	H	L	L	L	L	L	H	H	H
L	H	L	H	H	L	L	L	H	L	H	L	L	H
H	L	L	H	H	L	L	H	H	H	L	L	H	H

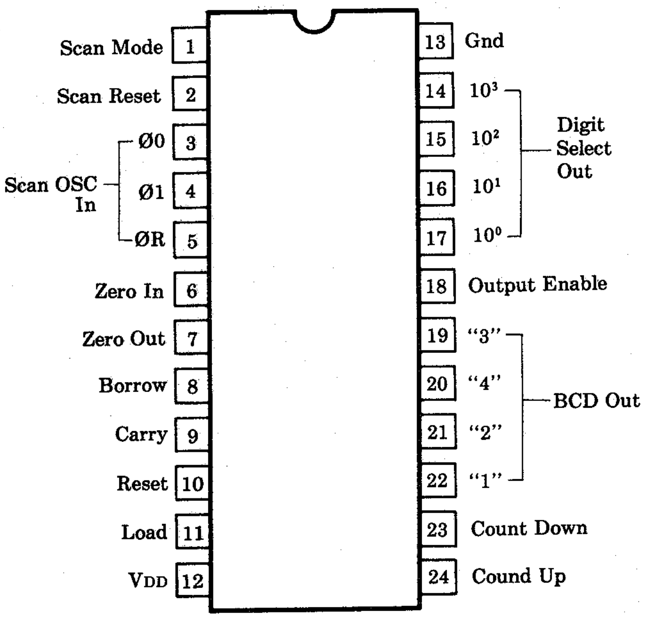
MSM5512RS 4-Digit BCD Up/Down Counter

CMOS IC


Output Enable
Scan Mode
Scan Reset
Ø0
C
Ø1
E
Ø2
Scan Counter
Scan Decoder
10³
10²
10¹
10⁰
Digit Select
Multiplexer
"1"
"2"
"4"
"8"
BCD Out
Load
Latch
Count Up
Count Down
Reset
Zero In
4 DIGIT BCD Up/Down Counter
1/10
1/10
1/10
1/10
Carry
Borrow
Zero. Det
Zero Out

MN8200 (152)

(Top View) 24 Lead Plastic DIP


Scan Mode 1
Scan Reset 2
Ø0 3
Ø1 4
ØR 5
Scan OSC In
Zero In 6
Zero Out 7
Borrow 8
Carry 9
Reset 10
Load 11
VDD 12
13 Gnd
14 10³
15 10²
16 10¹
17 10⁰
Digit Select Out
18 Output Enable
19 "3"
20 "4"
21 "2"
22 "1"
BCD Out
23 Count Down
24 Cound Up

FUNCTION TABLE

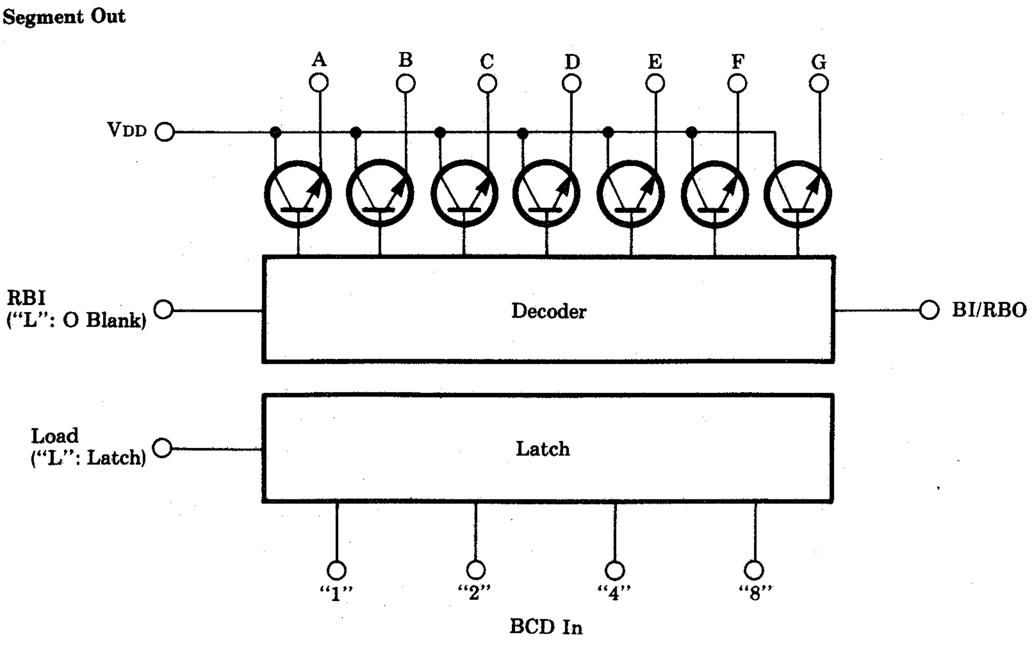
Input	Count Up	Positive Going Edge Trigger
	Count Down	
Carry, Borrow		
Zero In, Zero Out		
Reset	"H" Reset	
Load	"L" Latch	
Output Enable	H	Normal
	L	All Digit Select Are "L". All BCD Out Are of High Inpedance

SCAN CONTROL

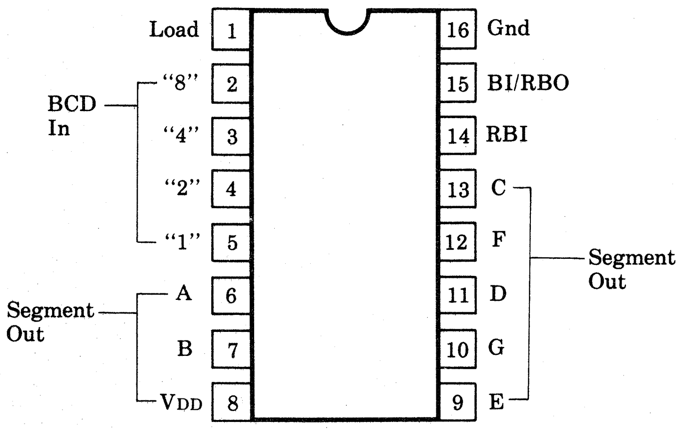
Scan Mode	H	$10^0 \rightarrow 10^1 \rightarrow 10^2 \rightarrow 10^3$
	L	$10^3 \rightarrow 10^2 \rightarrow 10^1 \rightarrow 10^0$
Scan Reset	H	Scan Mode→"H"→10^0 Scan Mode→"L"→10^3

MSM561RS BCD to 7-Segment Decoder/Latch/LED Driver

CMOS IC


Segment Out
A
B
C
D
E
F
G
VDD
RBI ("L": O Blank)
Decoder
BI/RBO
Load ("L": Latch)
Latch
"1"
"2"
"4"
"8"
BCD In

(Top View) 16 Lead Plastic DIP


Load 1
BCD In
"8" 2
"4" 3
"2" 4
"1" 5
Segment Out
A 6
B 7
VDD 8
16 Gnd
15 BI/RBO
14 RBI
13 C
12 F
11 D
10 G
9 E
Segment Out

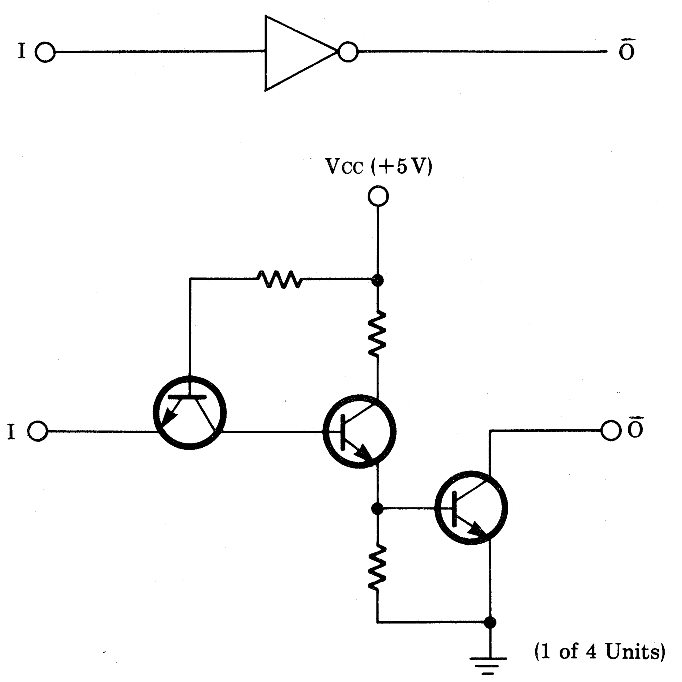
TRUTH TABLE

DECIMAL	RBI	BCD IN				BI/RBO	A	B	C	D	E	F	G	DISPLAY
		1	2	4	8									
*	*	*	*	*	*	L	L	L	L	L	L	L	L	BLANK
0	L	L	L	L	L	L	L	L	L	L	L	L	L	BLANK
0	H	L	L	L	L	H	H	H	H	H	H	H	L	0
1	*	H	L	L	L	H	L	H	H	L	L	L	L	1
2	*	L	H	L	L	H	H	H	L	H	H	L	H	2
3	*	H	H	L	L	H	H	H	H	H	L	L	H	3
4	*	L	L	H	L	H	L	H	H	L	L	H	H	4
5	*	H	L	H	L	H	H	L	H	H	L	H	H	5
6	*	L	H	H	L	H	H	L	H	H	H	H	H	6
7	*	H	H	H	L	H	H	H	H	L	L	H	L	7
8	*	L	L	L	H	H	H	H	H	H	H	H	H	8
9	*	H	L	L	H	H	H	H	H	H	L	H	H	9

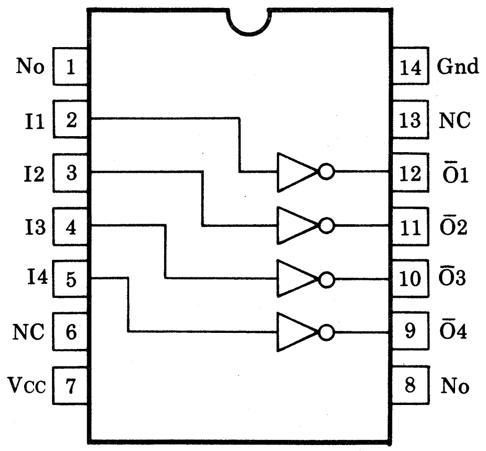
MSL966RS LED Digit Drivers

TTL IC

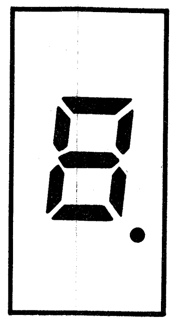
Circuit

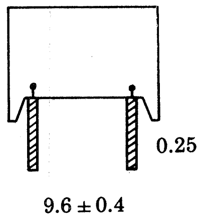

I
Ō
Vcc (+5 V)
I
Ō
(1 of 4 Units)

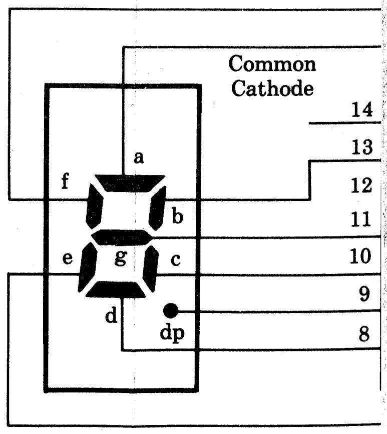
(Top View) 14 Load Plastic DIP


No 1
I1 2
I2 3
I3 4
I4 5
NC 6
Vcc 7
14 Gnd
13 NC
12 Ō1
11 Ō2
10 Ō3
9 Ō4
8 No

LN513RK






Common Cathode
a
b
c
d
e
f
g
dp
14
13
12
11
10
9
8

MSL966RS **LED Digit Drivers**

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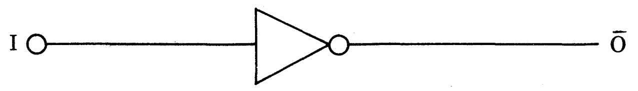
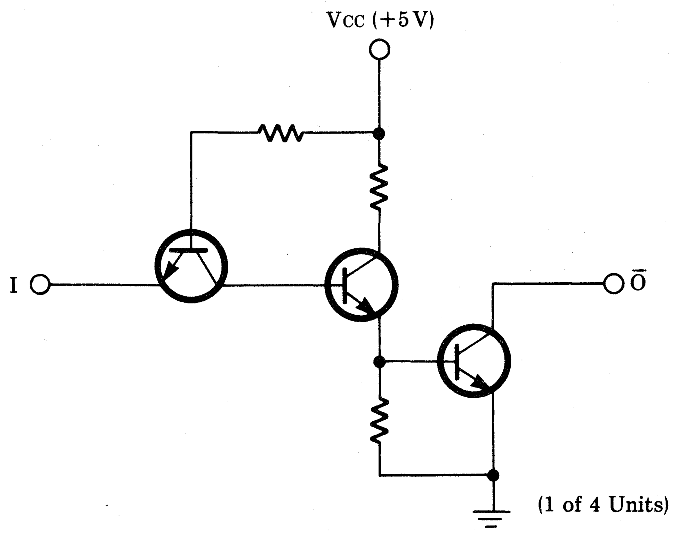
ISPLAY
BLANK
BLANK
0
1
2
3
4
5
6
7
8
9

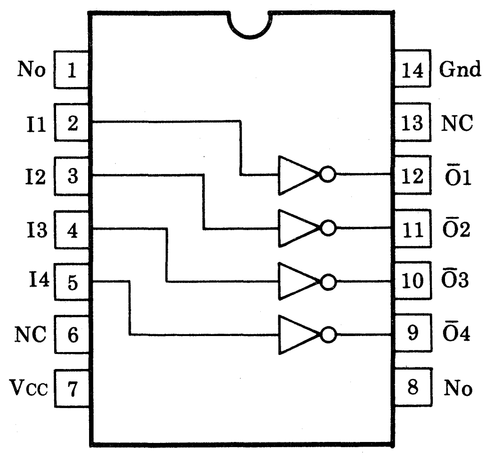
TTL IC

Circuit

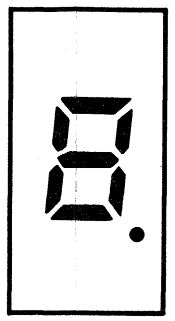


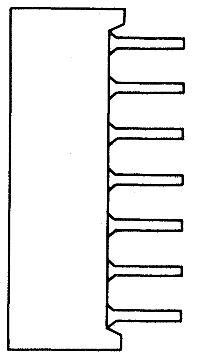

Vcc (+5 V)
I
Ō
(1 of 4 Units)

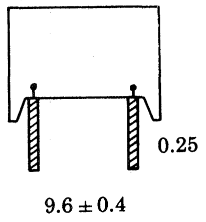
(Top View) 14 Load Plastic DIP

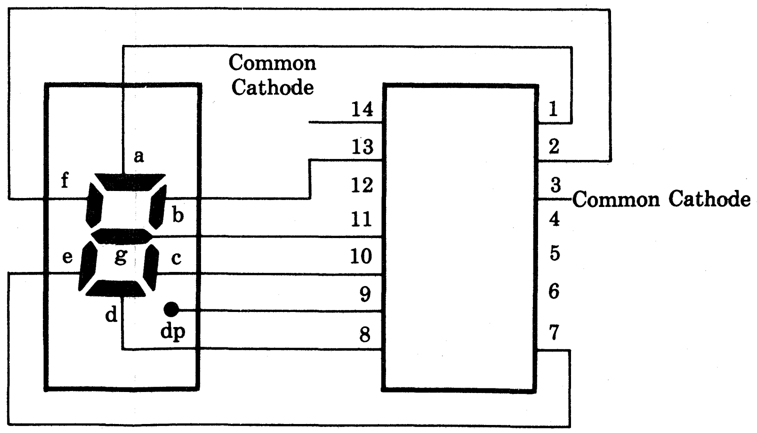

No 1
I1 2
I2 3
I3 4
I4 5
NC 6
Vcc 7
14 Gnd
13 NC
12 Ō1
11 Ō2
10 Ō3
9 Ō4
8 No

LN513RK








Common Cathode
a
b
c
d
e
f
g
dp
14
13
12
11
10
9
8
1
2
3
4
5
6
7
Common Cathode

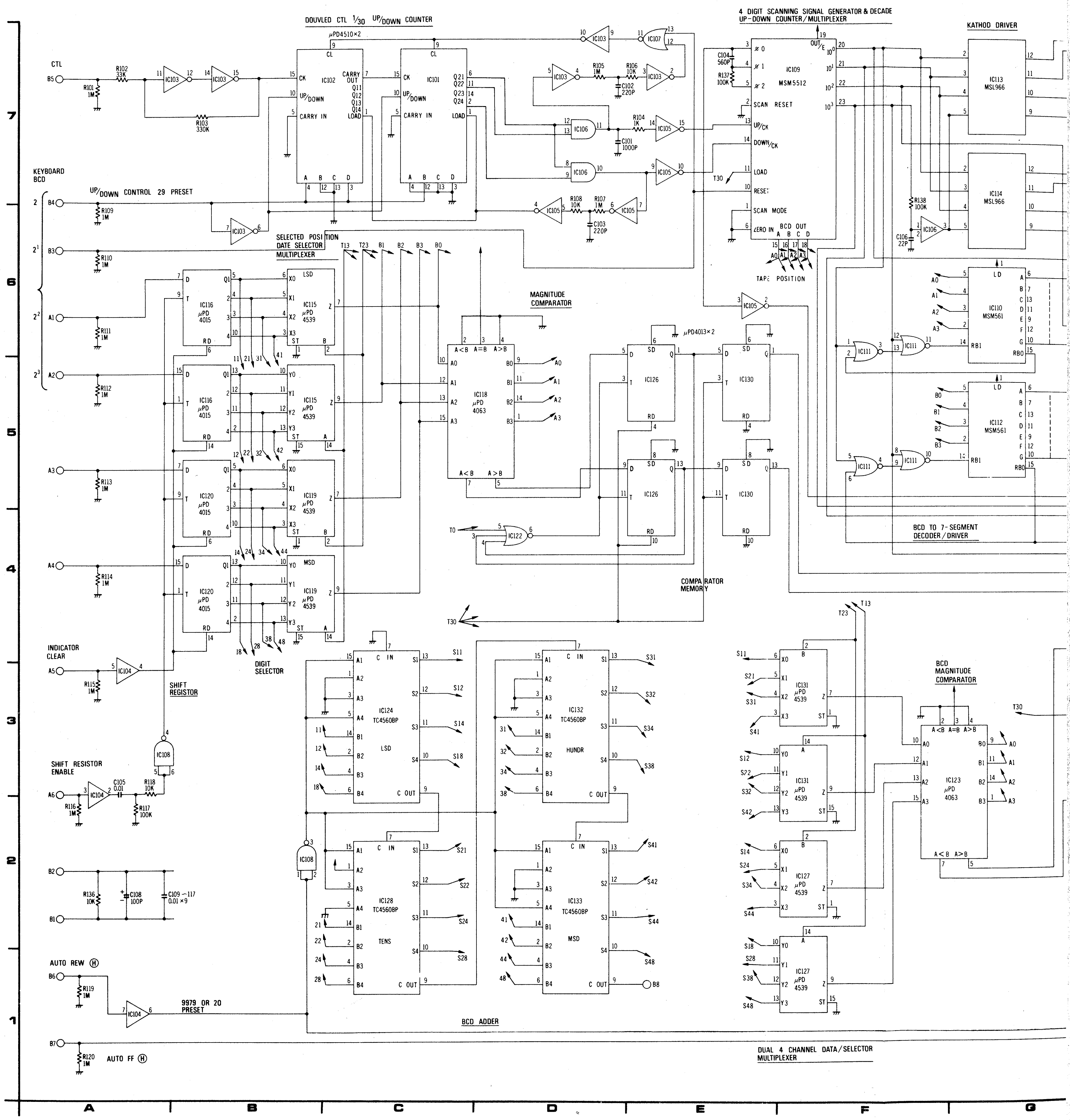
PIN NO.	LN513RK
1	Anode a
2	Anode f
3	Common Cathode
4	—
5	—
6	—
7	Anode e
8	Anode d
9	Anode dp
10	Anode c
11	Anode g
12	—
13	Anode b
14	Common Cathode

(154) NV 8200

IC LIST FOR NV-A800 (1)

Ref. No.	Part Number	Function
IC101	μPD4510/MSM4510	BCD Up/Down Counter
IC102	μPD4510/MSM4510	BCD Up/Down Counter
IC103	MSM4049	Invertor
IC104	MSM4050	Buffer
IC105	MSM4049	Invertor
IC106	MSM4081	And Gate/Invertor
IC107	MSM4001	Nor Gate
IC108	MSM4011	Nand Gate
IC109	MSM5512	4 Digit Scanning Signal Generator & Decade Up-Down Counter/Multiplexer
IC110	MSM561	BCD to 7-Segment Decorder/Latch/LED Driver
IC111	MSM4001	Nor Gate
IC112	MSM561	BCD to 7-Segment Decorder/Latch/LED Driver
IC113	MSL966	LED Digit Drivers
IC114	MSL966	LED Digit Drivers
IC115	μPD4539C/MSM4539	Dual Data Selector/Multiplexer
IC116	μPD4015C/MSM4015	Dual 4-Bit Static Shift Resistor
IC117	MSM4001	
IC118	μPD4063C/MSM4063	4-Bit Magnitude Comparator
IC119	μPD4539C/MSM4539	Dual Data Selector/Multiplexer
IC120	μPD4015C/MSM4015	Dual 4-Bit Static Shift Resistor
IC121	MSM4011	Nand Gate
IC122	MSM4025	Nor Gate
IC123	μPD4063C/MSM4063	4-Bit Magnitude Comparator
IC124	TC4560BP	NBCD Adder
IC125	μPD4013C/MSM4013	Dual D Type Flip-Flop
IC126	μPD4013C/MSM4013	Dual D Type Flip-Flop
IC127	μPD4539C/MSM4539	Dual Data Selector/Multiplexer
IC128	TC4560BP	NBCD Adder
IC129	μPD4013C/MSM4013	Dual D Type Flip-Flop
IC130	μPD4013C/MSM4013	Dual D Type Flip-Flop
IC131	μPD4539C/MSM4539	Dual Data Selector/Multiplexer
IC132	TC4560BP	NBCD Adder
IC133	TC4560BP	NBCD Adder

AUTO SEARCH CONTROLLER SCHEMATIC DIAGRAM (1)

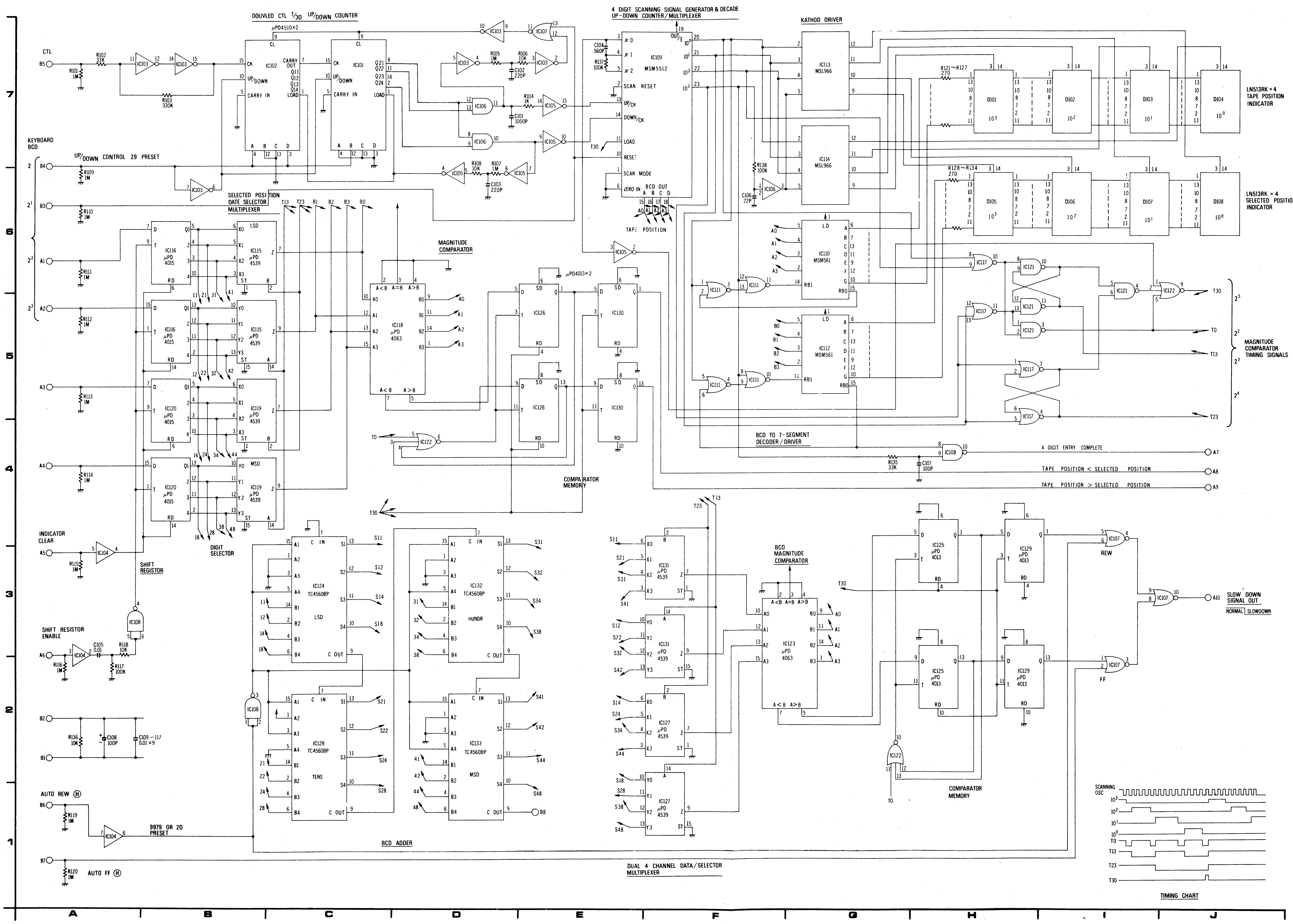

DOUVLED CTL 1/30 UP/DOWN COUNTER
μPD4510×2
4 DIGIT SCANNING SIGNAL GENERATOR & DECADE UP-DOWN COUNTER/MULTIPLEXER
KATHOD DRIVER
CTL
KEYBOARD BCD
UP/DOWN CONTROL 29 PRESET
SELECTED POSITION DATE SELECTOR MULTIPLEXER
MAGNITUDE COMPARATOR
μPD4013×2
TAPE POSITION
BCD TO 7-SEGMENT DECODER/DRIVER
COMPARATOR MEMORY
INDICATOR CLEAR
SHIFT REGISTOR
DIGIT SELECTOR
SHIFT RESISTOR ENABLE
LSD
TENS
HUNDR
MSD
BCD ADDER
BCD MAGNITUDE COMPARATOR
AUTO REW Ⓗ
9979 OR 20 PRESET
AUTO FF Ⓗ
DUAL 4 CHANNEL DATA/SELECTOR MULTIPLEXER
IC101
IC102
IC103
IC104
IC105
IC106
IC107
IC108
IC109 MSM5512
IC110 MSM561
IC111
IC112 MSM561
IC113 MSL966
IC114 MSL966
IC115 μPD 4539
IC116 μPD 4015
IC118 μPD 4063
IC119 μPD 4539
IC120 μPD 4015
IC122
IC123 μPD 4063
IC124 TC4560BP
IC126
IC127 μPD 4539
IC128 TC4560BP
IC130
IC131 μPD 4539
IC132 TC4560BP
IC133 TC4560BP
7
6
5
4
3
2
1
A
B
C
D
E
F
G

AUTO SEARCH CONTROLLER SCHEMATIC DIAGRAM (1)

ecade Up-Down

) Driver

) Driver



DOUVLED CTL 1/30 UP/DOWN COUNTER
μPD4510×2
4 DIGIT SCANNING SIGNAL GENERATOR & DECADE UP-DOWN COUNTER/MULTIPLEXER
KATHOD DRIVER
CTL
B5
KEYBOARD BCD
UP/DOWN CONTROL 29 PRESET
B4
B3
A1
A2
A3
A4
A5
A6
B2
B1
B6
B7
INDICATOR CLEAR
SHIFT RESISTOR ENABLE
SHIFT REGISTOR
DIGIT SELECTOR
SELECTED POSITION DATE SELECTOR/MULTIPLEXER
MAGNITUDE COMPARATOR
μPD4013×2
COMPARATOR MEMORY
BCD TO 7-SEGMENT DECODER/DRIVER
TAPE POSITION
BCD OUT
LN513RK × 4 TAPE POSITION INDICATOR
LN513RK × 4 SELECTED POSITION INDICATOR
MAGNITUDE COMPARATOR TIMING SIGNALS
T30
T0
T13
T23
4 DIGIT ENTRY COMPLETE
TAPE POSITION < SELECTED POSITION
TAPE POSITION > SELECTED POSITION
A7
A8
A9
BCD MAGNITUDE COMPARATOR
REW
FF
SLOW DOWN SIGNAL OUT
NORMAL SLOWDOWN
A10
AUTO REW Ⓗ
AUTO FF Ⓗ
9979 OR 20 PRESET
BCD ADDER
LSD
TENS
HUNDR
MSD
DUAL 4 CHANNEL DATA/SELECTOR MULTIPLEXER
IC109 MSM5512
IC113 MSL966
IC114 MSL966
IC110 MSM561
IC112 MSM561
IC118 μPD 4063
IC123 μPD 4063
IC124 TC4560BP
IC128 TC4560BP
IC132 TC4560BP
IC133 TC4560BP
IC125 μPD 4013
IC129 μPD 4013
D101 D102 D103 D104
D105 D106 D107 D108
TIMING CHART
SCANNING OSC
A B C D E F G H I J
1 2 3 4 5 6 7

W-8200

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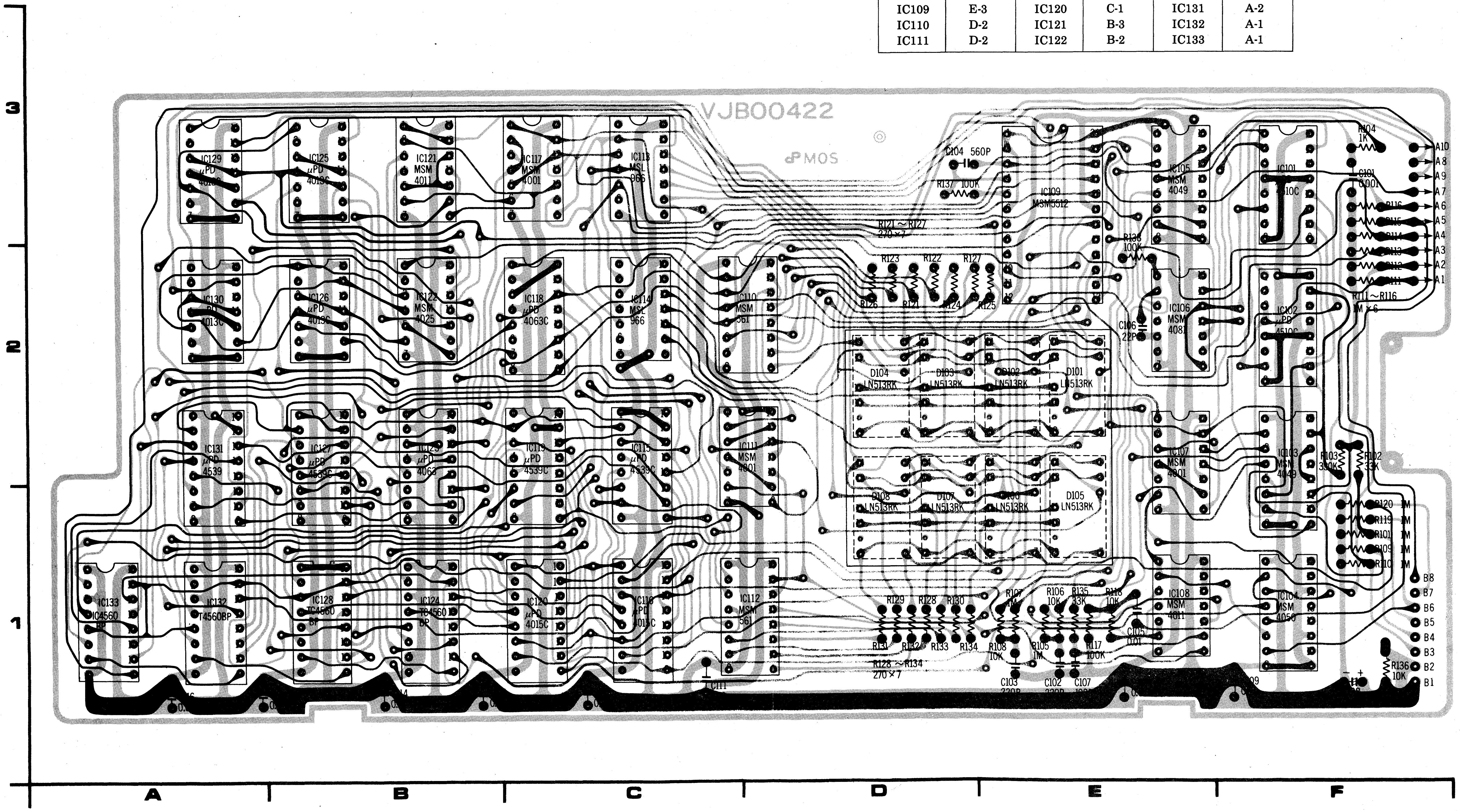
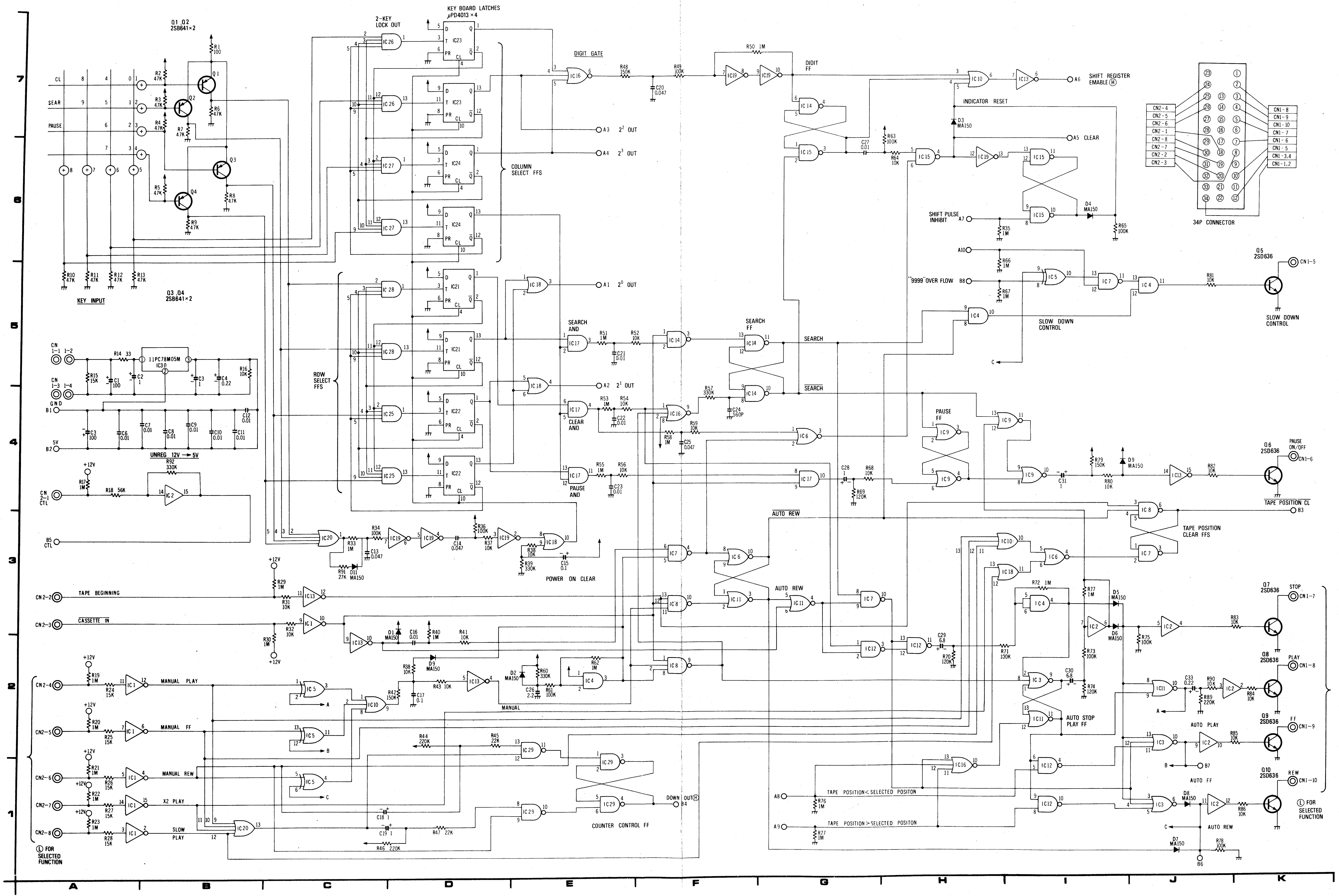
AUTO SEARCH CONTROLLER CIRCUIT BOARD (1)

Ref. No.	Location	Ref. No.	Location	Ref. No.	Location
IC101	F-3	IC112	D-1	IC123	B-2
IC102	F-2	IC113	C-3	IC124	B-1
IC103	F-1	IC114	C-2	IC125	B-3
IC104	F-1	IC115	C-2	IC126	B-2
IC105	E-3	IC116	C-1	IC127	B-2
IC106	E-2	IC117	C-3	IC128	B-1
IC107	E-2	IC118	C-2	IC129	A-3
IC108	E-1	IC119	C-2	IC130	A-2
IC109	E-3	IC120	C-1	IC131	A-2
IC110	D-2	IC121	B-3	IC132	A-1
IC111	D-2	IC122	B-2	IC133	A-1

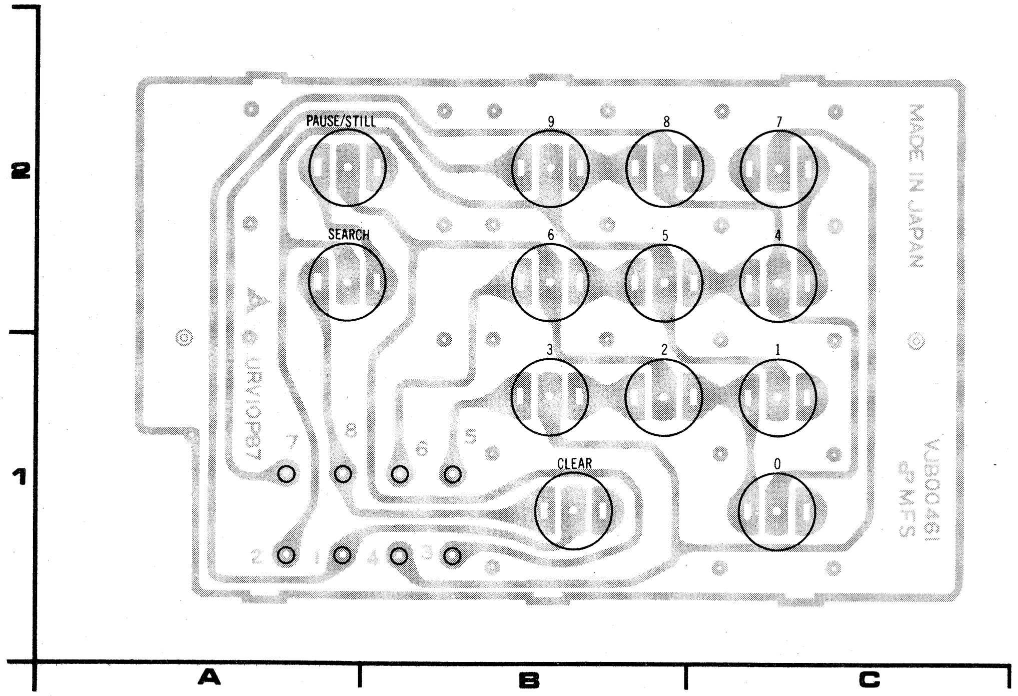

VJB00422
PMOS
IC129 μPD 4013C
IC125 μPD 4013C
IC121 MSM 4011
IC117 MSM 4001
IC113 MSL 966
C104 560P
R137 100K
IC109 MSM5512
IC105 MSM 4049
IC101 4510C
R104 1K
C101 0.001
R121~R127 270×7
R123 R122 R127
R126 R121 R124 R125
R138 100K
IC130 μPD 4013C
IC126 μPD 4013C
IC122 MSM 4025
IC118 μPD 4063C
IC114 MSL 966
IC110 MSM 561
C106 22P
IC106 MSM 4081
IC102 μPD 4510C
R111~R116 1M×6
D104 LN513RK
D103 LN513RK
D102 LN513RK
D101 LN513RK
IC131 μPD 4539
IC127 μPD 4539C
IC123 μPD 4063
IC119 μPD 4539C
IC115 μPD 4539C
IC111 MSM 4001
D108 LN513RK
D107 LN513RK
D106 LN513RK
D105 LN513RK
IC107 MSM 4001
IC103 MSM 4049
R103 330K
R102 33K
R120 R119 R101 R109 R110 1M
IC133 TC4560 BP
IC132 TC4560BP
IC128 TC4560 BP
IC124 TC4560 BP
IC120 μPD 4015C
IC116 μPD 4015C
IC112 MSM 561
C111
R129 R128 R130
R131 R132 R133 R134
R128~R134 270×7
R107 1M
R106 10K
R135 33K
R118 10K
R108 10K
R105 1M
R117 100K
C105 .001
C103 220P
C102 220P
C107
IC108 MSM 4011
IC104 MSM 4050
R136 10K
A10 A8 A9 A7 A6 A5 A4 A3 A2 A1
B8 B7 B6 B5 B4 B3 B2 B1
1
2
3
A
B
C
D
E
F

NV 8200 (156)

AUTO SEARCH CONTROLLER SCHEMATIC DIAGRAM (2)


KEY BOARD LATCHES
μPD4013 ×4
2-KEY LOCK OUT
Q1, Q2 2SB641×2
Q3, Q4 2SB641×2
KEY INPUT
CL
SEAR
PAUSE
COLUMN SELECT FFS
ROW SELECT FFS
DIGIT GATE
DIDIT FF
SHIFT REGISTER ENABLE Ⓗ
INDICATOR RESET
A5 CLEAR
A3 2² OUT
A4 2³ OUT
A1 2⁰ OUT
A2 2¹ OUT
SHIFT PULSE INHIBIT A7
"9999" OVER FLOW B8
A10
SLOW DOWN CONTROL
34P CONNECTOR
CN2-4
CN2-5
CN2-6
CN2-1
CN2-8
CN2-7
CN2-2
CN2-3
CN1-8
CN1-9
CN1-10
CN1-7
CN1-6
CN1-5
CN1-3,4
CN1-1,2
Q5 2SD636
CN1-5
SEARCH AND
SEARCH FF
SEARCH
CLEAR AND
PAUSE AND
PAUSE FF
Q6 2SD636
PAUSE ON/OFF
CN1-6
TAPE POSITION CL
B3
TAPE POSITION CLEAR FFS
AUTO REW
11PC78M05M IC30
UNREG 12V → 5V
GND B1
5V B2
CN 2-1 CTL
B5 CTL
POWER ON CLEAR
CN2-2 TAPE BEGINNING
CN2-3 CASSETTE IN
CN2-4 MANUAL PLAY
CN2-5 MANUAL FF
CN2-6 MANUAL REW
CN2-7 X2 PLAY
CN2-8 SLOW PLAY
Ⓛ FOR SELECTED FUNCTION
MANUAL
COUNTER CONTROL FF
DOWN OUT Ⓗ B4
AUTO STOP PLAY FF
Q7 2SD636 STOP CN1-7
Q8 2SD636 PLAY CN1-8
Q9 2SD636 FF CN1-9
Q10 2SD636 REW CN1-10
AUTO PLAY
AUTO FF
AUTO REW
B7
B6
A8 TAPE POSITION < SELECTED POSITON
A9 TAPE POSITION > SELECTED POSITON
Ⓛ FOR SELECTED FUNCTION
A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7

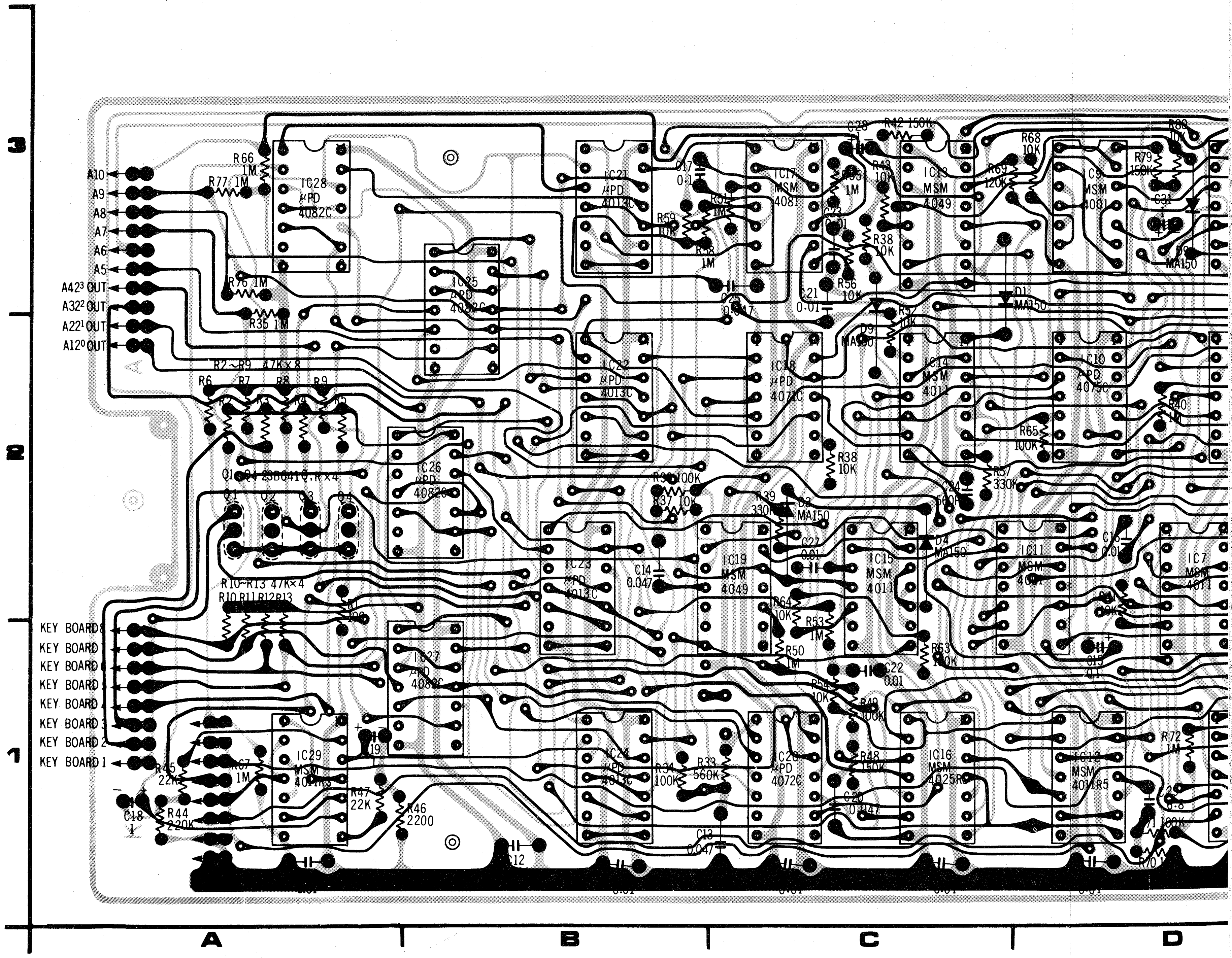
KEY BOARD SWITCH CIRCUIT BOARD


PAUSE/STILL
SEARCH
9
8
7
6
5
4
3
2
1
CLEAR
0
MADE IN JAPAN
URV10P87
VJB00461
MFS
A
B
C
1
2

IC LIST FOR NV-A800 (2)

Ref. No.	Part Number	Function	Location
IC1	MSM4049	Invertor	E-3
IC2	MSM4050	Buffer	E-2
IC3	MSM4025	Nor Gate	E-2
IC4	MSM4081	And Gate	E-1
IC5	μPD4030C/MSM4030	Exclusive Nor Gate	D-3
IC6	MSM4001	Nor Gate	D-2
IC7	MSM4011	Nand Gate	D-2
IC8	MSM4023	Nand Gate	D-1
IC9	MSM4001	Invertor	D-3
IC10	μPD4075C/MSM4075	Or Gate	D-2
IC11	MSM4001	Nor Gate	D-2
IC12	MSM4011	Nand Gate	D-1
IC13	MSM4049	Invertor	C-3
IC14	MSM4011	Nand Gate	C-2
IC15	MSM4011	Nand Gate	C-2
IC16	MSM4025	Nor Gate	C-1
IC17	MSM4081	And Gate	C-3
IC18	μPD4071/MSM4071	Or Gate	C-2
IC19	MSM4049	Invertor	C-2
IC20	μPD4072C/MSM4072	Or Gate	C-1
IC21	μPD4013C/MSM4013	Dual D-Type Flip-Flop	B-3
IC22	μPD4013C/MSM4013	Dual D-Type Flip-Flop	B-2
IC23	μPD4013C/MSM4013	Dual D-Type Flip-Flop	B-2
IC24	μPD4013C/MSM4013	Dual D-Type Flip-Flop	B-1
IC25	μPD4082C/MSM4082	And Gate	B-3
IC26	μPD4082C/MSM4082	And Gate	B-2
IC27	μPD4082C/MSM4082	And Gate	B-1
IC28	μPD4082C/MSM4082	And Gate	A-3
IC29	μPD4013C/MSM4013	Nand Gate	A-1
IC30	11PC78M05M	Regulator	F-1

AUTO SEARCH CONTROLLER CIRCUIT BOARD (2)


A10
A9
A8
A7
A6
A5
A42³ OUT
A32² OUT
A22¹ OUT
A12⁰ OUT
KEY BOARD 8
KEY BOARD 7
KEY BOARD 6
KEY BOARD 5
KEY BOARD 4
KEY BOARD 3
KEY BOARD 2
KEY BOARD 1
IC28 μPD 4082C
IC25 μPD 4082C
IC26 μPD 4082C
IC27 μPD 4082C
IC29 MSM 4013
IC21 μPD 4013C
IC22 μPD 4013C
IC23 μPD 4013C
IC24 μPD 4013C
IC17 MSM 4081
IC18 μPD 4071C
IC19 MSM 4049
IC20 μPD 4072C
IC13 MSM 4049
IC14 MSM 4011
IC15 MSM 4011
IC16 MSM 4025
IC9 MSM 4001
IC10 μPD 4075C
IC11 MSM 4001
IC12 MSM 4011
IC7 MSM 4011
R2~R9 47K×8
R10~R13 47K×4
Q1~Q4 2SB641Q,R×4
R66 1M
R77 1M
R76 1M
R35 1M
R42 150K
R68 10K
R69 120K
R79 150K
R38 10K
R56 10K
D1 MA150
D2 MA150
D4 MA150
D9 MA150
R39 330K
R37 10K
R57 330K
R65 100K
R40 1M
R50 1M
R53 1M
R63 100K
R48 150K
R49 100K
R34 100K
R33 560K
R47 22K
R46 2200
R45 22K
R44 220K
R67 1M
R72 1M
C18
C14 0.047
C27 0.01
C22 0.01
C21 0.01
C13 0.047
C12
C20 0.047
A
B
C
D
1
2
3

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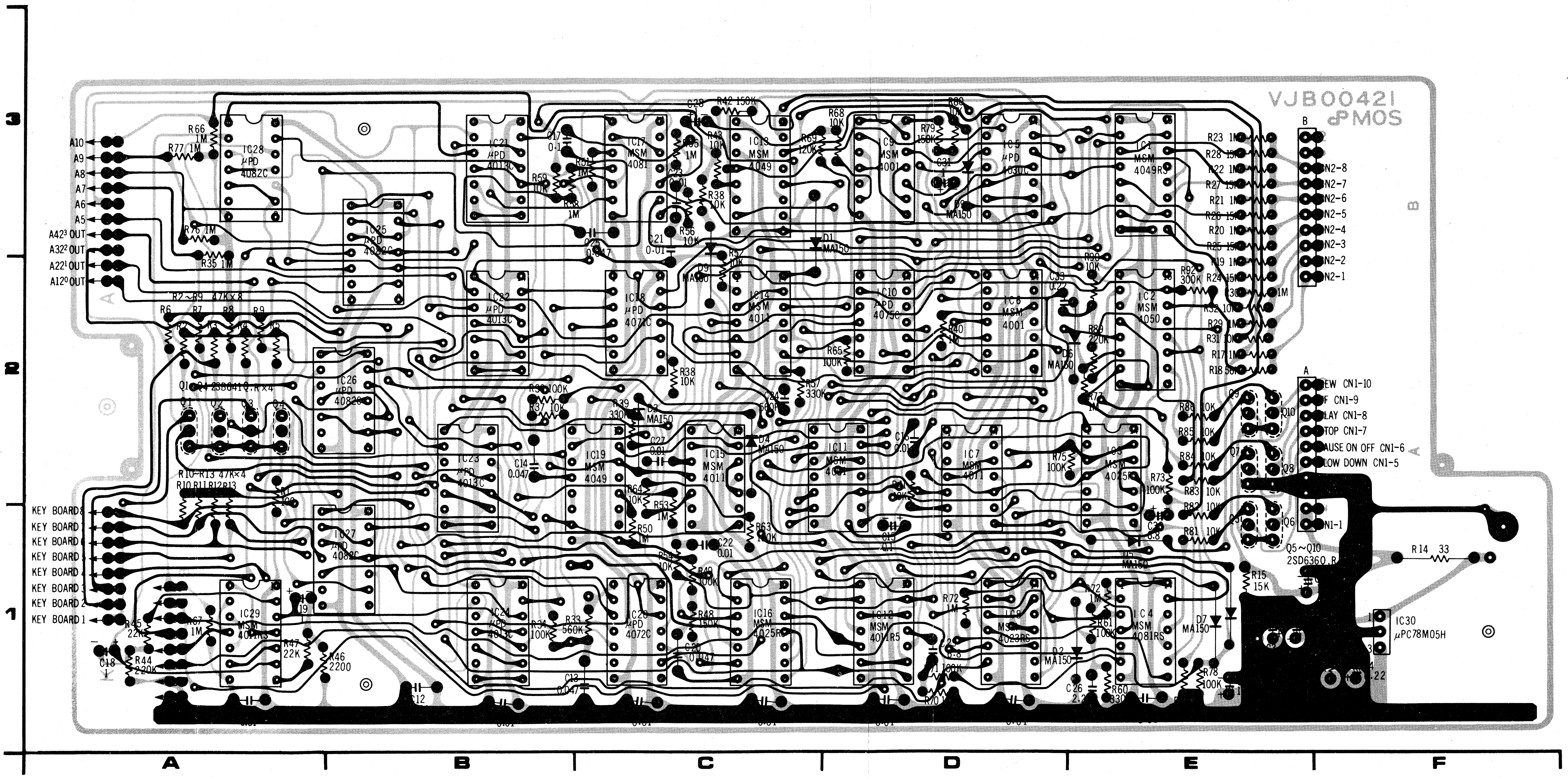
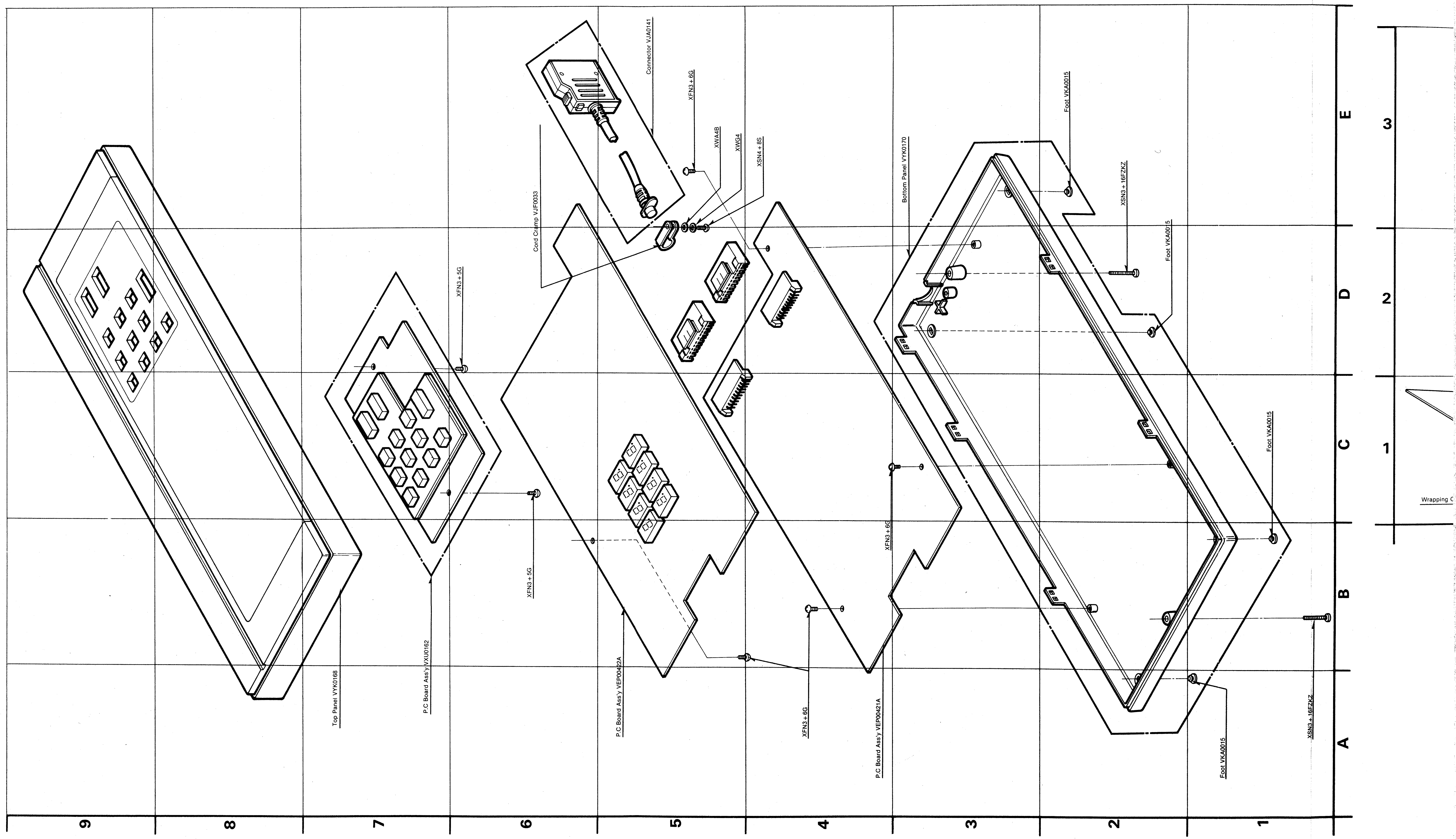
AUTO SEARCH CONTROLLER CIRCUIT BOARD (2)

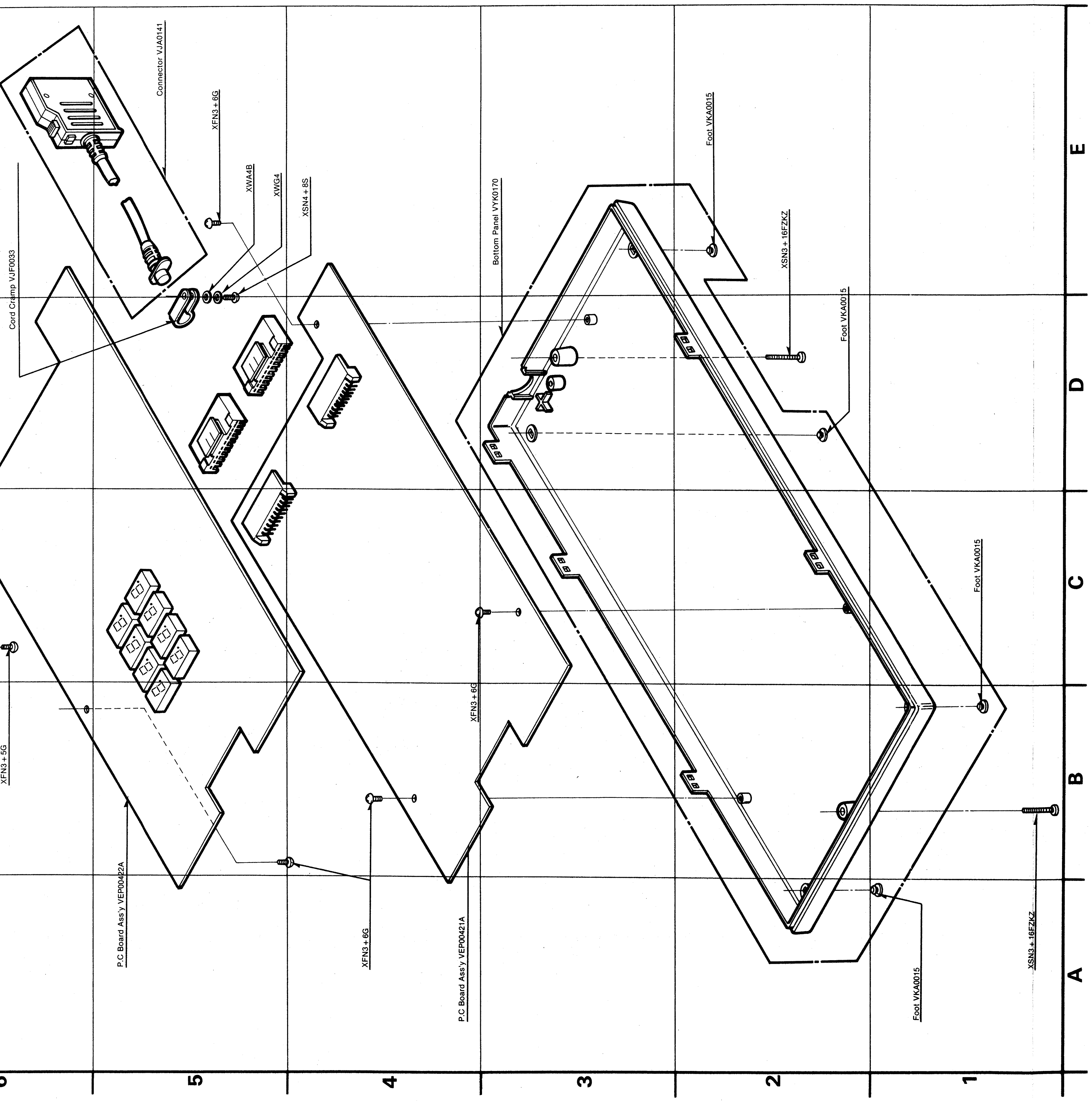


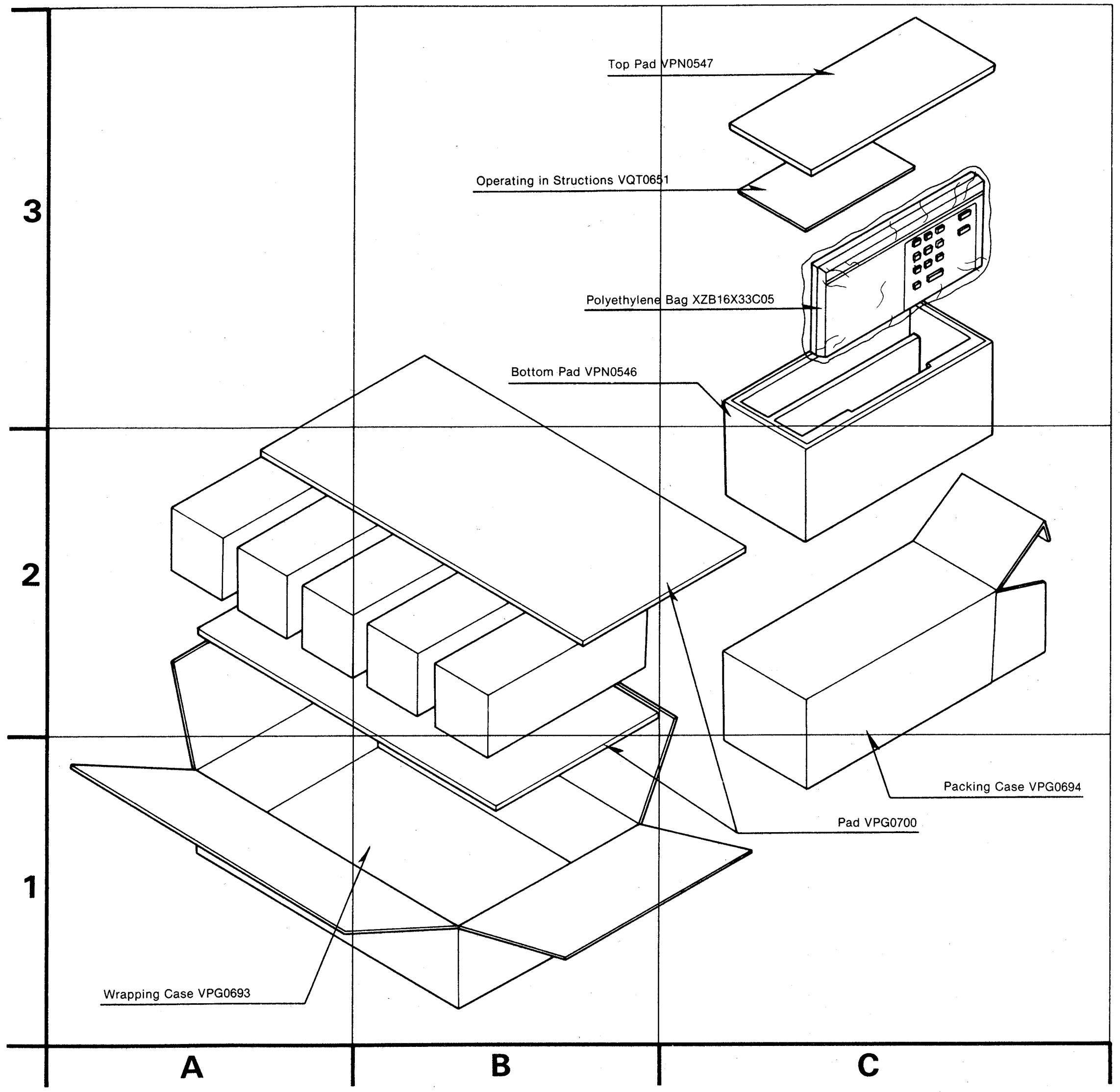
VJB00421
PMOS
3
2
1
A
B
C
D
E
F
A10
A9
A8
A7
A6
A5
A42³ OUT
A32² OUT
A22¹ OUT
A12⁰ OUT
KEY BOARD 8
KEY BOARD 7
KEY BOARD 6
KEY BOARD 5
KEY BOARD 4
KEY BOARD 3
KEY BOARD 2
KEY BOARD 1
IC28 μPD 4082C
IC25 μPD 4082C
IC21 μPD 4013C
IC17 MSM 4081
IC13 MSM 4049
IC9 MSM 4001
IC5 μPD 4030C
IC1 MSM 4049RS
IC22 μPD 4013C
IC18 μPD 4071C
IC14 MSM 4011
IC10 μPD 4075C
IC6 MSM 4001
IC2 MSM 4050
IC26 μPD 4082C
IC23 μPD 4013C
IC19 MSM 4049
IC15 MSM 4011
IC11 MSM 4011
IC7 MSM 4011
IC3 MSM 4025RS
IC27 μPD 4082C
IC29 MSM 4011RS
IC24 μPD 4013C
IC20 μPD 4072C
IC16 MSM 4025RS
IC12 MSM 4011RS
IC8 MSM 4023RS
IC4 MSM 4081RS
IC30 μPC78M05H
Q1~Q4 2SB641Q.R×4
Q5~Q10 2SD636Q.R
R2~R9 47K×8
R10~R13 47K×4
R66 1M
R77 1M
R76 1M
R35 1M
R42 150K
R68 10K
R69 120K
R79 150K
R80 10K
R55 1M
R43 10K
R38 10K
R56 10K
R57 10K
R59 10K
R61 1M
R58 1M
R23 1M
R28 15K
R22 1M
R27 15K
R21 1M
R26 15K
R20 1M
R25 15K
R19 1M
R24 15K
R30 1M
R32 10K
R29 1M
R31 10K
R17 1M
R18 56K
R90 10K
R92 300K
R89 220K
R40 1M
R65 100K
R37 330K
R38 10K
R36 100K
R37 10K
R39 330K
R71 1M
R86 10K
R85 10K
R84 10K
R83 10K
R82 10K
R81 10K
R75 100K
R73 100K
R64 10K
R53 1M
R50 1M
R54 10K
R49 100K
R48 150K
R63 100K
R41 10K
R14 33
R15 15K
R72 1M
R61 100K
R78 100K
R60 330
R70
R1 100
R45 22K
R67 1M
R44 220K
R47 22K
R46 2200
R34 100K
R33 560K
C28
C17 0.1
C23 0.047
C21 0.01
C31
C33 0.22
C24 680P
C14 0.047
C27 0.01
C15 0.01
C22 0.01
C19 0.1
C30 6.8
C20 0.047
C13 0.047
C12
C18
C19
C26 2.2
D1 MA150
D2 MA150
D3 MA150
D4 MA150
D5 MA150
D6 MA150
D7 MA150
D8 MA150
D9 MA150
CN2-8
CN2-7
CN2-6
CN2-5
CN2-4
CN2-3
CN2-2
CN2-1
REW CN1-10
FF CN1-9
PLAY CN1-8
STOP CN1-7
PAUSE ON OFF CN1-6
SLOW DOWN CN1-5
CN1-1
0.01
1M

NV 8200 (158)

EXPLODED VIEW


Connector VJA0141
XFN3 + 6G
XWA4B
XWG4
XSN4 + 8S
Cord Cramp VJF0033
Bottom Panel VYK0170
Foot VKA0015
XSN3 + 16FZKZ
Foot VKA0015
XFN3 + 5G
XFN3 + 5G
Foot VKA0015
XFN3 + 6G
Top Panel VYK0168
P.C Board Ass'y VXU0162
P.C Board Ass'y VEP00422A
XFN3 + 6G
P.C Board Ass'y VEP00421A
Foot VKA0015
XSN3 + 16FZKZ
Wrapping C
A
B
C
D
E
1
2
3
4
5
6
7
8
9
1
2
3


Connector VJA0141
XFN3 + 6G
XWA4B
XWG4
XSN4 + 8S
Cord Cramp VJF0033
Bottom Panel VYK0170
Foot VKA0015
XSN3 + 16FZKZ
Foot VKA0015
Foot VKA0015
XFN3 + 5G
XFN3 + 6G
P.C Board Ass'y VEP00422A
XFN3 + 6G
P.C Board Ass'y VEP00421A
Foot VKA0015
XSN3 + 16FZKZ
E
D
C
B
A
5
4
3
2
1


Top Pad VPN0547
Operating in Structions VQT0651
Polyethylene Bag XZB16X33C05
Bottom Pad VPN0546
Packing Case VPG0694
Pad VPG0700
Wrapping Case VPG0693
3
2
1
A
B
C

MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-A800

Notes:
1. The column of Ref. No. indicates the located position of the part. Refer to exploded view and see the cross section of the horizontal column (1—up) and the vertical column (A—up).

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			NV-A800		
(4-A)		VEP00421A	P.C Board Ass'y	1	
(5-A)		VEP00422A	P.C Board Ass'y	1	
(5-E)		VJA0141	Connector	1	
(6-E)		VJE0033	Cord Cramp	1	
(2-E) (1-C)		VKA0015	Foot	4	
(7-A)		VXU0162	P.C Board Ass'y	1	
(7-A)		VYK0168	Top Panel	1	
(3-E)		VYK0170	Bottom Panel	1	
			SCREW		
		XFN3+5G		2	
		XFN3+6G		4	
		XSN4+8S		1	
		XSN3+16FZKZ		2	
		XWA48		1	
		XWG4		1	
(1-A)		VPG0693	Wrapping Case	1	
(1-C)		VPG0694	Packing Case	1	
(1-C)		VPG0700	Pad	2	
(3-B)		VPN0546	Bottom Pad	1	
(3-C)		VPN0547	Top Pad	1	
(3-B)		VQT0651	Operating Instructions	1	
(3-C)		XZB16X33C05	Polyethylene Bag	1	

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ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-A800

Note:
1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety. When replacing any of components, use only the original ones.
3. Unless otherwise specified;
   All resistors are in OHMS (Ω), 1/4 w, ±5% carbon, K=1,000Ω, M=1,000KΩ.
   All capacitors are in MICROFARADS (μF), ±10%, P=μμF.
   All coils are in MICROHENRIES (μF), m=10³μ.
4. C.B.A: Circuit Board Assembly.
5. C.B: Circuit Board.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			NV-A800		
			Auto Search Controller		
			Integrated Circuits (1)		
IC101,102		μPD5410C		2	
		or (MSM4510)			
IC103		MSM4049		1	
IC104		MSM4050		1	
IC105		MSM4049		1	
IC106		MSM4081		1	
IC107		MSM4001		1	
IC108		MSM4011		1	
IC109		MSM5512		1	
IC110		MSM561		1	
IC111		MSM4001		1	
IC112		MSM561		1	
IC113,114		MSL966		2	
IC115		μPD4539C		1	
		or (MSM4539)			
IC116		μPD4015C		1	
		or (MSM4015)			
IC117		MSM4001		1	
IC118		μPD4036C		1	
		or (MSM4036)			
IC119		μPD4539C		1	
		or (MSM4539)			
IC120		μPD4015C		1	
		or (MSM4015)			
IC121		MSM4011		1	
IC122		MSM4025		1	
IC123		μPD4063C		1	
		or (MSM4063C)			
IC124		TC4560BP		1	
IC125,126		μPD4013C		2	
		or (MSM4013)			
IC127		μPD4539C		1	
		or (MSM4539)			
IC128		TC4560BP		1	
IC129,130		μPD4013C		2	
		or (MSM4013)			
IC131		μPD4539C		1	
		or (MSM4539)			
IC132,133		TC4560BP		2	
			LED		
D101-D108		LN513RK		8	
			Resistors		
R101		ERD10TJ105	1M	1	
R102		ERD10TJ333	33K	1	
R103		ERD10TJ334	330K	1	
R104		ERD10TJ102	1K	1	
R105		ERD10TJ105	1K	1	
R106		ERD10TJ103	10K	1	
R107		ERD10TJ105	1M	1	
R108		ERD10TJ103	10K	1	
R109-R116		ERD10TJ105	1M	8	
R117		ERD10TJ104	100K	1	
R118		ERD10TJ103	10K	1	
R119,120		ERD10TJ105	1M	2	
R121-R134		ERD10TJ271	270	14	
R135		ERD10TJ333	33K	1	
R136		ERD10TJ103	10K	1	
R137,R138		ERD10TJ104	100K	2	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			Capacitors		
C101		ECKD1H102	Ceramic 50V 1000P	1	
C102,103		ECLD1H221	Ceramic 50V 220P	2	
C104		ECKD1H561	Ceramic 50V 560P	1	
C105		FBD05X103	Semiconductor 5V 0.01	1	
C106		ECCD1H220	Ceramic 50V 22P	1	
C107		ECKD1H101	Ceramic 50V 100P	1	
C108		ECEA1AS101	Electrolytic 10V 100	1	
C109-C116		FBD05X103	Semiconductor 5V 0.01	8	
			Auto Search Controller		
			Integrated Circuits (2)		
IC1		MSM4049		1	
IC2		MSM4050		1	
IC3		MSM4025		1	
IC4		MSM4081		1	
IC5		μPD4030C		1	
		or MSM4030			
IC6		MSM4001		1	
IC7		MSM4011		1	
IC8		MSM4023		1	
IC9		MSM4001		1	
IC10		μPD4075C		1	
		or MSM4075			
IC11		MSM4001		1	
IC12		MSM4011		1	
IC13		MSM4049		1	
IC14,15		MSM4011		2	
IC16		MSM4025		1	
IC17		MSM4081		1	
IC18		μPD4071C		1	
		or MSM4071			
IC19		MSM4049		1	
IC20		μPD4072C		1	
		or MSM4072			
IC21-IC24		μPD4013C		4	
		or MSM4013			
IC25-IC28		μPD4082C		4	
		or MSM4082			
IC29		MSM4011		1	
IC30		μPD78M05H		1	
			Transistors		
Q1-Q4		2SB641(Q,R)		4	
Q5-Q10		2SD636(Q,R)		6	
			Diodes		
D1-D10		MA150		10	
			Resistors		
R1		ERD10TJ101	100	1	
R2-R13		ERD10TJ473	47K	12	
R14		ERD50TJ100	10	1	
R15		ERD10TJ153	15K	1	
R16		ERD10TJ103	10K	1	
R17		ERD10TJ105	1M	1	
R18		ERD10TJ153	15K	1	
R19-R23		ERD10TJ105	1M	5	
R24-R28		ERD10TJ153	15K	5	
R29,30		ERD10TJ105	1M	2	
R31,32		ERD10TJ103	10K	2	
R33		ERD10TJ564	560K	1	
R34		ERD10TJ104	100K	1	
R35		ERD10TJ105	1M	1	
R36		ERD10TJ104	100K	1	
R37,38		ERD10TJ103	10K	2	
R39		ERD10TJ334	330K	1	
R40		ERD10TJ105	1M	1	
R41		ERD10TJ103	10K	1	
R42		ERD10TJ154	150K	1	
R43		ERD10TJ103	10K	1	
R44		ERD10TJ224	220K	1	
R45		ERD10TJ223	22K	1	
R46		ERD10TJ224	220K	1	
R47		ERD10TJ223	22K	1	
R48		ERD10TJ334	330K	1	
R49		ERD10TJ104	100K	1	
R50,51		ERD10TJ105	1M	2	
R52		ERD10TJ103	10K	1	
R53		ERD10TJ105	1M	1	
R54		ERD10TJ103	10K	1	
R55		ERD10TJ105	1M	1	
R56		ERD10TJ103	10K	1	
R57		ERD10TJ334	330K	1	
R58		ERD10TJ105	1M	1	
R59		ERD10TJ103	10K	1	
R60		ERD10TJ334	330K	1	
R61		ERD10TJ104	100K	1	
R62		ERD10TJ105	1M	1	
R63		ERD10TJ104	100K	1	
R64		ERD10TJ103	10K	1	
R65		ERD10TJ104	100K	1	
R66,67		ERD10TJ105	1M	2	
R68		ERD10TJ103	10K	1	
R69,70		ERD10TJ124	120K	2	
R71		ERD10TJ104	100K	1	
R72		ERD10TJ105	1M	1	
R73		ERD10TJ104	100K	1	
R74		ERD10TJ124	120K	1	
R75		ERD10TJ104	100K	1	
R76,77		ERD10TJ105	1M	2	
R78		ERD10TJ104	100K	1	
R79		ERD10TJ154	150K	1	
R80-R86		ERD10TJ103	10K	7	
			Capacitors		
C1		ECEA1CS101	Electrolytic 16V 100	1	
C2,3		ECEA1HS010	Electrolytic 50V 1	2	
C4		ECF35ER22	Ceramic 35V 0.22	1	
C5		ECEA1AS101	Electrolytic 10V 100	1	
C6-C12		ECEF1E103	Semiconductor 25V 0.01	7	
C13,14		ECEF-F1E473	Semiconductor 25V 0.047	2	
C15		ECF35ER1	Ceramic 35V 0.1	1	
C17		ECF35ER1	Ceramic 35V 0.1	1	
C18,19		ECEA1HS010	Electrolytic 50V 1	2	
C20		ECEF-F1E473	Semiconductor 25V 0.047	1	
C21-C23		ECEF1E103	Semiconductor 25V 0.01	3	
C24		ECKD1H561	Ceramic 50V 560P	1	
C25		ECEF-F1E473	Semiconductor 25V 0.047	1	
C26		ECF10E2R2	Ceramic 10V 2.2	1	
C27		ECEF1E103	Semiconductor 25V 0.01	1	
C28		ECEA1HS010	Electrolytic 50V 1	1	
C29,30		ECF16F6R8	Ceramic 16V 6.8	2	
C31		ECEA1HS010	Electrolytic 50V 1	1	

ORDER NO. VRD-8003-387

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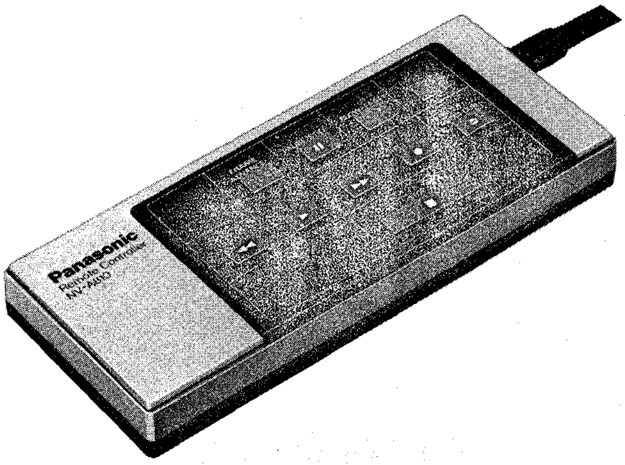
Service Manual

Remote Controller
NV-A810

Schematic Diagrams
Replacement Parts List



SPECIFICATIONS

Dimensions:	186 × 79 × 25.2 mm
Weight:	Approx. (0.5 kg)
Standard Cable Length:	Approx. 3 m
Connector:	34 pin male plug
Optional Accessory:	Extension cable, NV-C80 Approx. 5 m (As many as 3 extension cable can be connected.)

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic®

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

NV 8200 (162)

CONTENTS

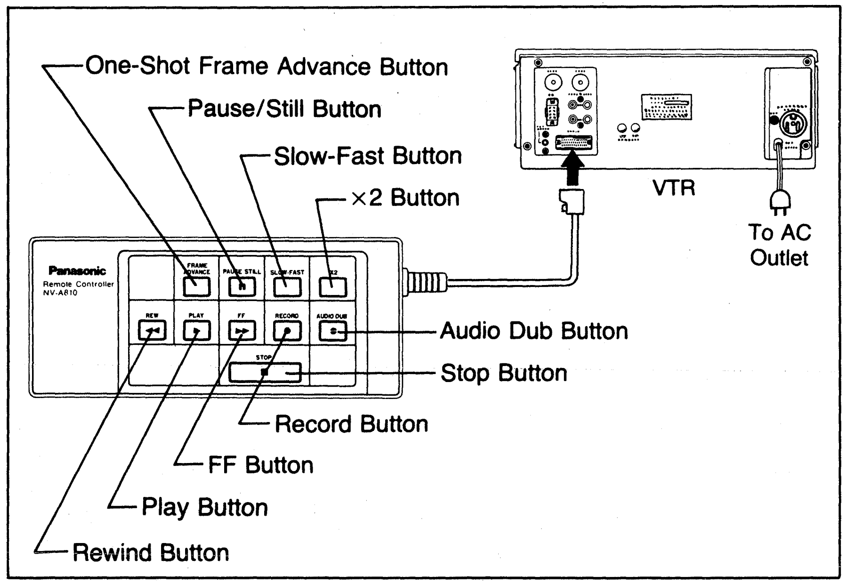
SPECIFICATIONS .... Cover
TO THE CUSTOMER 1
PRECAUTIONS 1
CONNECTING THE REMOTE CONTROLLER 1
HOW TO USE 1
REMOTE CONTROLLER CIRCUIT 2
EXPLODED VIEW 4
MECHANICAL REPLACEMENT PARTS LIST 6
ELECTRICAL REPLACEMENT PARTS LIST 6

■ TO THE CUSTOMER:

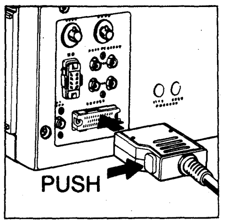
This remote controller NV-A810 has been developed for use with the Panasonic NV-8200 or NV-8170. When connected, it allows remote operation of all functions except eject.

■ PRECAUTIONS:

This remote controller NV-A810 has been developed especially for use with the Panasonic NV-8200 or NV-8170.
If it is connected to Panasonic NV-8170, RECORD and AUDIO DUB will not function.
You can check which operating mode you are in by observing the pilot lamps on this remote controller, except FRAME ADVANCE and STOP modes.


One-Shot Frame Advance Button
Pause/Still Button
Slow-Fast Button
×2 Button
VTR
To AC Outlet
Panasonic
Remote Controller NV-A810
Audio Dub Button
Stop Button
Record Button
FF Button
Play Button
Rewind Button

■ CONNECTING THE REMOTE CONTROLLER



Connect the 34 pin plug of the remote controller to the remote control connector (REMOTE) at the rear of video cassette recorder which has facilities for remote control operation.

Note:
When connecting or disconnecting the plug of the remote controller, be sure to push the button on the side to lock or unlock this connector as shown in the figure.

■ HOW TO USE

Use the push buttons of the remote controller in the same way as operating the video cassette recorder's front mounted function push buttons. The push buttons on the recorder can also be operated even when the remote controller is connected.

MEMO

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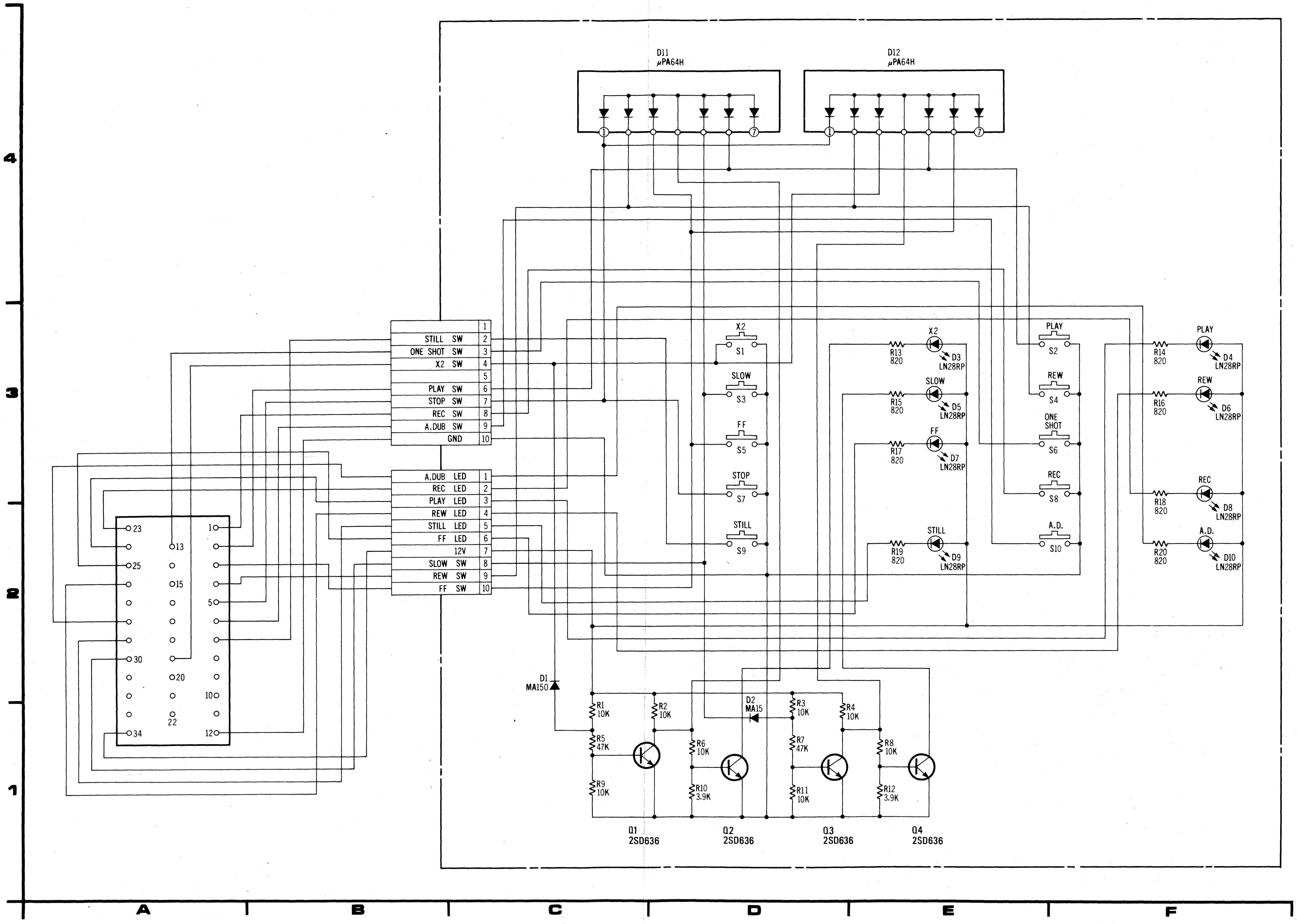
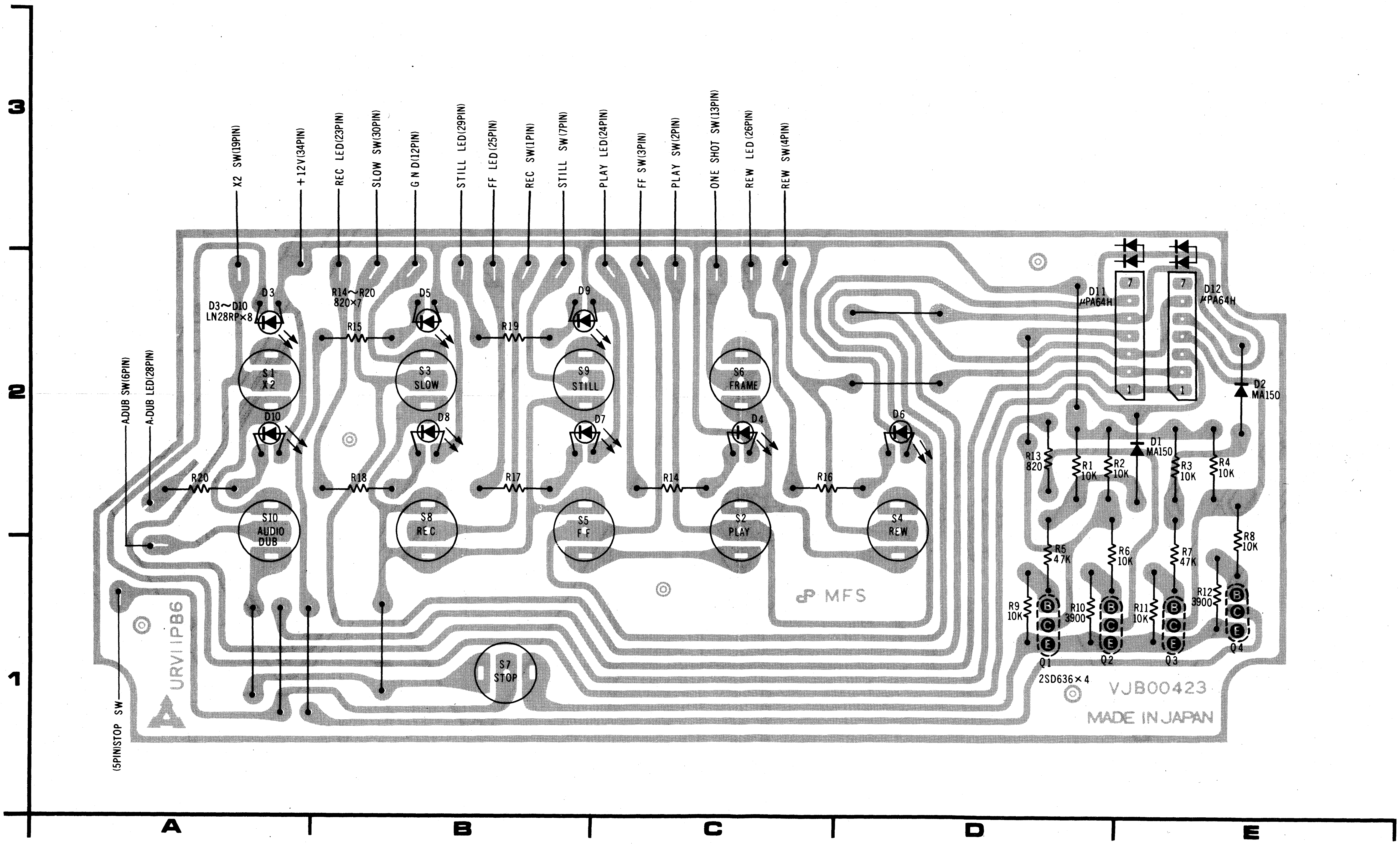
REMOTE CONTROLLER SCHEMATIC DIAGRAM


D11
μPA64H
D12
μPA64H
STILL SW
ONE SHOT SW
X2 SW
PLAY SW
STOP SW
REC SW
A.DUB SW
GND
A.DUB LED
REC LED
PLAY LED
REW LED
STILL LED
FF LED
12V
SLOW SW
REW SW
FF SW
X2
S1
SLOW
S3
FF
S5
STOP
S7
STILL
S9
PLAY
S2
REW
S4
ONE SHOT
S6
REC
S8
A.D.
S10
R13 820
X2
D3 LN28RP
R15 820
SLOW
D5 LN28RP
R17 820
FF
D7 LN28RP
R19 820
STILL
D9 LN28RP
R14 820
PLAY
D4 LN28RP
R16 820
REW
D6 LN28RP
R18 820
REC
D8 LN28RP
R20 820
A.D.
D10 LN28RP
D1
MA150
D2
MA15
R1 10K
R2 10K
R3 10K
R4 10K
R5 47K
R6 10K
R7 47K
R8 10K
R9 10K
R10 3.9K
R11 10K
R12 3.9K
Q1
2SD636
Q2
2SD636
Q3
2SD636
Q4
2SD636
1
5
10
12
13
15
20
22
23
25
30
34
1
2
3
4
A
B
C
D
E
F

NV 8200
165

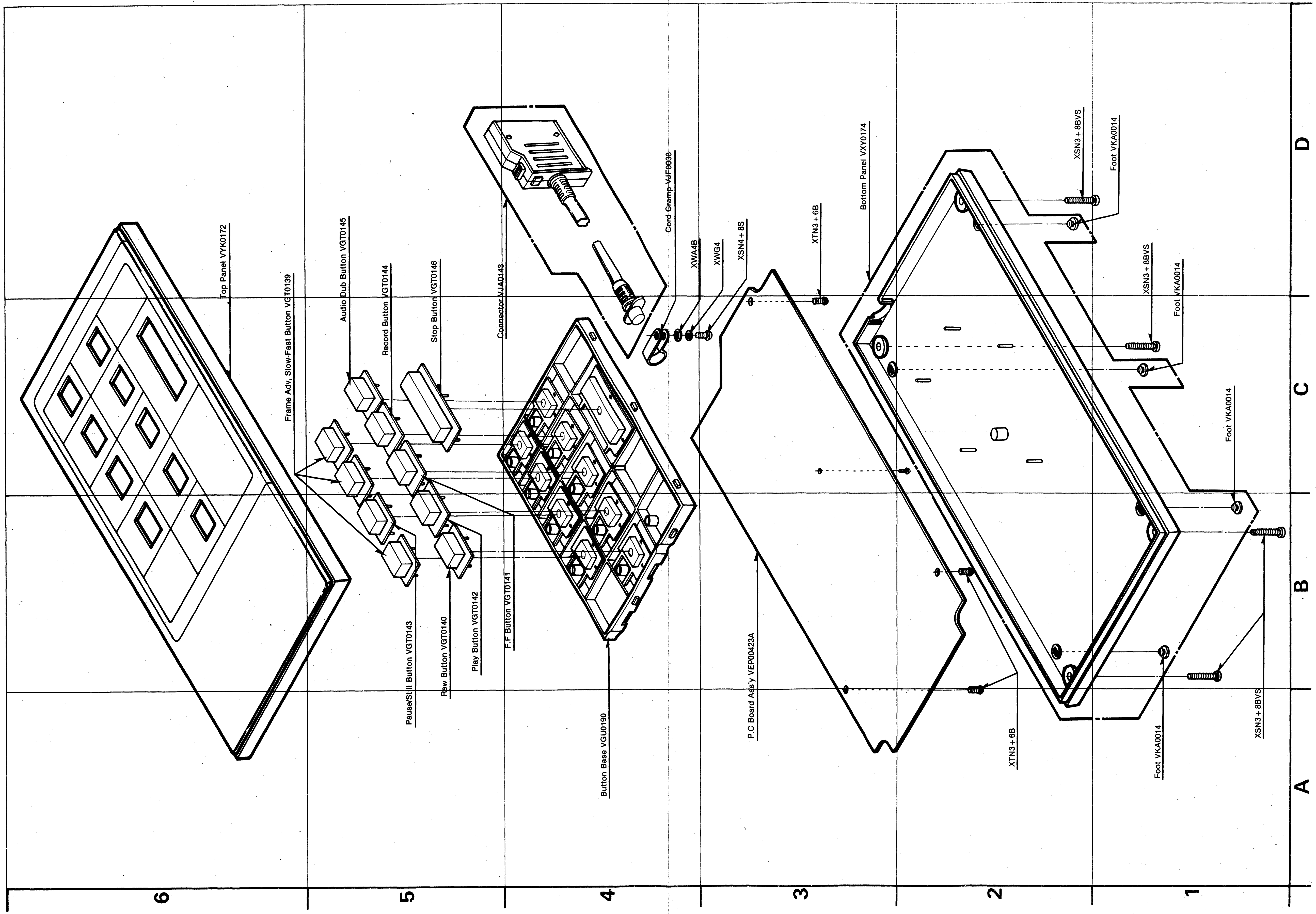
REMOTE CONTROLLER CIRCUIT BOARD

34 PIN CONNECTOR


X2 SW(19PIN)
+12V(34PIN)
REC LED(23PIN)
SLOW SW(30PIN)
G N D(12PIN)
STILL LED(29PIN)
FF LED(25PIN)
REC SW(1PIN)
STILL SW(7PIN)
PLAY LED(24PIN)
FF SW(3PIN)
PLAY SW(2PIN)
ONE SHOT SW(13PIN)
REW LED(26PIN)
REW SW(4PIN)
A-DUB SW(6PIN)
A-DUB LED(28PIN)
(5PIN)STOP SW
D3
D3~D10
LN28RP×8
R14~R20
820×7
D5
D9
R15
R19
S1
X2
S3
SLOW
S9
STILL
S6
FRAME
D10
D8
D7
D4
D6
R20
R18
R17
R14
R16
S10
AUDIO
DUB
S8
REC
S5
FF
S2
PLAY
S4
REW
S7
STOP
D11
μPA64H
D12
μPA64H
7
1
D2
MA150
D1
MA150
R13
820
R1
10K
R2
10K
R3
10K
R4
10K
R5
47K
R6
10K
R7
47K
R8
10K
R9
10K
R10
3900
R11
10K
R12
3900
B
C
E
Q1
Q2
Q3
Q4
2SD636×4
MFS
URV11PB6
VJB00423
MADE IN JAPAN
1
2
3
A
B
C
D
E

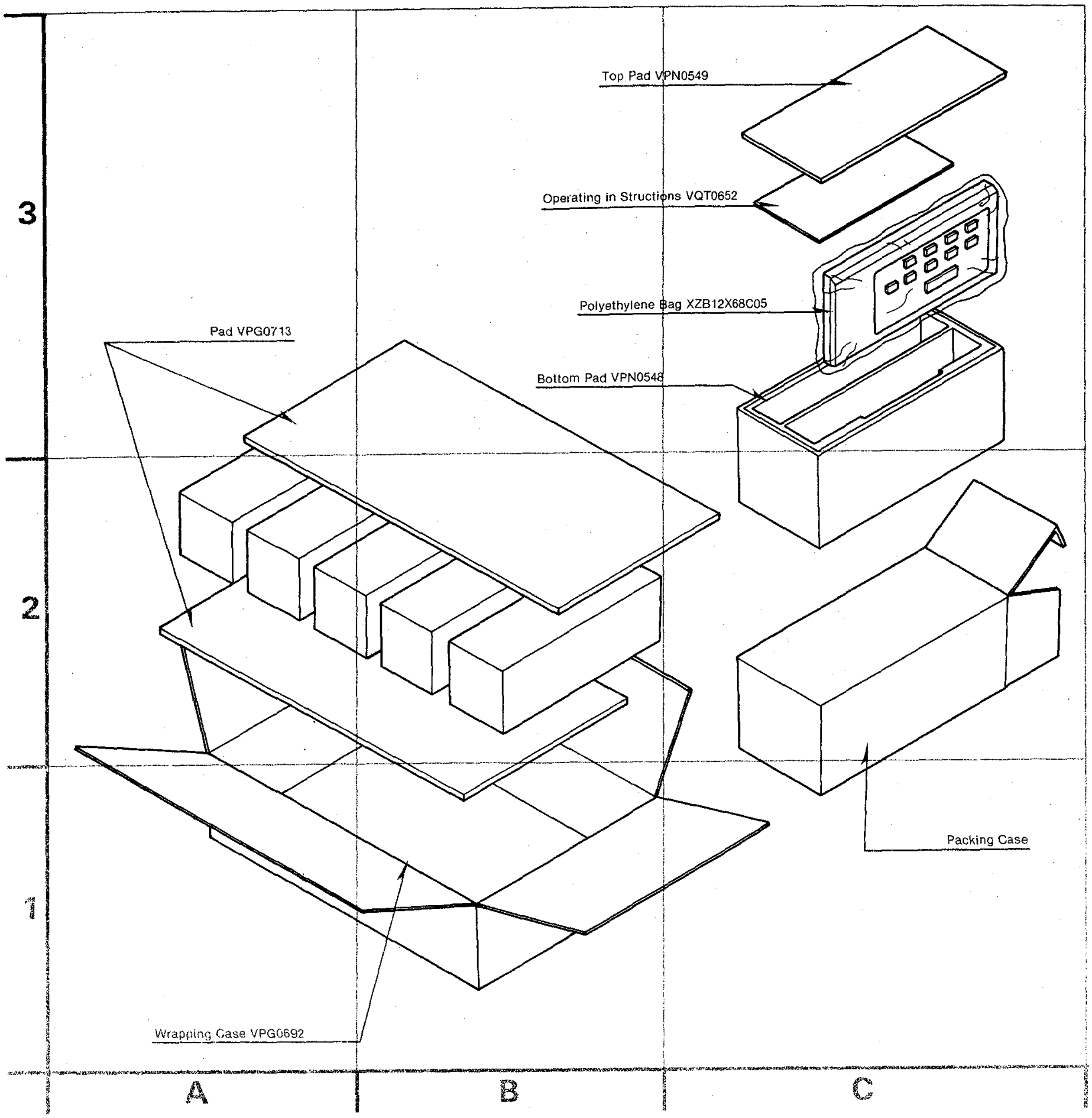
NV 8200 (166)

EXPLODED VIEW


Top Panel VYK0172
Frame Adv, Slow-Fast Button VGT0139
Audio Dub Button VGT0145
Record Button VGT0144
Stop Button VGT0146
Connector VJA0143
Cord Cramp VJF0033
XWA4B
XWG4
XSN4+8S
XTN3+6B
Bottom Panel VXY0174
XSN3+8BVS
Foot VKA0014
XSN3+8BVS
Foot VKA0014
Foot VKA0014
Pause/Still Button VGT0143
Rew Button VGT0140
Play Button VGT0142
F.F Button VGT0141
Button Base VGU0190
P.C Board Ass'y VEP00423A
XTN3+6B
Foot VKA0014
XSN3+8BVS
D
C
B
A
6
5
4
3
2
1

NV8200

167


Top Pad VPN0549
Operating in Structions VQT0652
Polyethylene Bag XZB12X68C05
Bottom Pad VPN0548
Pad VPG0713
Packing Case
Wrapping Case VPG0692
3
2
1
A
B
C

NV 8200 (168)

MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-A810

Notes:
1. The column of Ref. No. indicates the located position of the part. Refer to exploded view and see the cross section of the horizontal . . lumn (1—up) and the vertical column (A—up).

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			(NV-A810)		
(3-B)		VEP00423A	P. C. Board Ass'y	1	
(6-C)		VGT0139	Frame Ady, Slow-Fast	1	
			Button		
(5-B)		VGT0140	REW Button	1	
(4-B)		VGT0141	F.F. Button	1	
(5-B)		VGT0142	Play Button	1	
(5-B)		VGT0143	Parse/Still Button	1	
(5-C)		VGT0144	Record Button	1	
(5-D)		VGT0145	Audio Dub Button	1	
(5-C)		VGT0146	Stop Button	1	
(4-A)		VGU0190	Button Base	1	
(4-D)		VJF0033	Cord Cramp	1	
(1-A)		VKA0014	Foot	1	
(3-D)		VKY0174	Bottom Panel	1	
(6-D)		VYK0172	Top Panel	1	
			SCREW		
		XSN3+8BVS		4	
		XSN4+8S		1	
		XTN3+6B		4	
		XWA4B		1	
		XWG4		1	
			(NV-A810)		
(1-A)		VPG0692	Wrapping Case	1	
(3-A)		VPG0713	Pad	2	
(3-B)		VPN0548	Bottom Pad	1	
(3-C)		VPN0549	Top Pad	1	
(3-C)		VQT652	Operating Instructions	1	
(3-C)		XZB12X68C05	Polyethylene Bag	1	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-A810

Note:
1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety. When replacing any of components, use only the original ones.
3. Unless otherwise specified;
   All resistors are in OHMS (Ω), 1/4 w, ±5% carbon, K=1,000Ω, M=1,000 KΩ.
   All capacitors are in MICROFARADS (μF), ±10%, P=μμF.
   All coils are in MICROHENRIES (μF), m=10^3μ.
4. C.B.A: Circuit Board Assembly.
5. C.B: Circuit Board.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			(NV-A810)		
			Remote Controller		
			Transistors		
Q1-Q4		2SD636		4	
			Diodes		
D1,D2		MA150		2	
D3-D10		LN28RP	LED	8	
D11,D12		UPA64H		2	
			Resistors		
R1-R4		ERD25TJ103	10K	4	
R5		ERD25TJ473	47K	1	
R6		ERD25TJ103	10K	1	
R7		ERD25TJ473	47K	1	
R8,R9		ERD25TJ103	10K	2	
R10		ERD25TJ392	3.9K	1	
R11		ERD25TJ103	10K	1	
R12		ERD25TJ392	3.9K	1	
R13-R20		ERD25TJ821	820	8	

ORDER NO. VRD-8003-388

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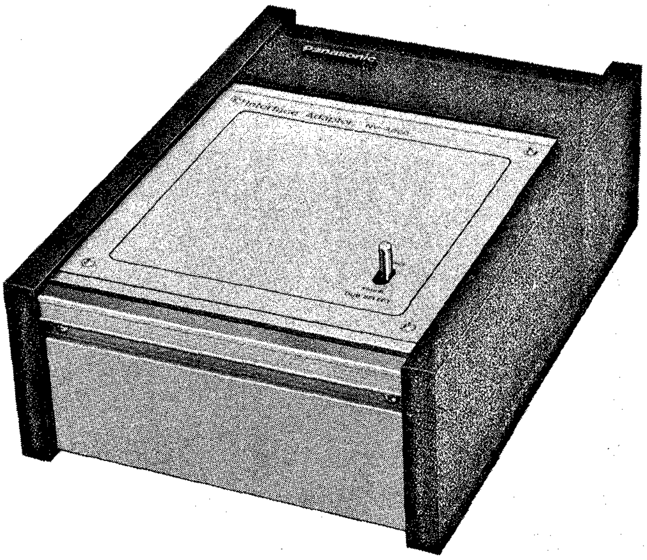
Service Manual

Interface Adaptor
NV-A820

Schematic Diagrams
Replacement Parts List



SPECIFICATIONS

Power Source:	DC 12V (supplied from NV-8200, NV-8170, or NV-9500)
Power Consumption:	2.4W
Connection Cable:	34-pin cable
Cable Length:	1m
Operating Temperature:	5°C~40°C
Dimensions:	206(W) × 290(D) × 122(H)mm
Weight:	Approx. 5kg
Accessories Supplied:	1 pc. Connection cable, VJA0135, 1m

Weight and dimensions shown are approximate.
Specifications are subject to change without notice.

Panasonic

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

NV-8200 (170)

INTRODUCTION

The NV-A820 interface adaptor facilitates connection of the automatic editing controller NV-A950 to the ½″ VHS video cassette recorder model NV-8200 or player NV-8170 as a source player in a standard ¾″ editing system (NV-9500).

When the NV-8200 is to be used as the recorder in a ½″ to ½″ assembly recording system, another NV-A820 interface adaptor will be required.

CONTENTS

SPECIFICATIONS .... Cover
CONTROLS AND THEIR FUNCTIONS 1
CONNECTION OF THE NV-A820 1
VHS TO 3/4″ VCR EDITING 2
VHS TO VHS ASSEMBLY RECORDING 4
3/4″ VCR TO VHS ASSEMBLY RECORDING 6
OPERATION OF THE NV-A950 WITH THE VHS NV-8200, NV-8170 8
POINTS TO REMEMBER 9
INTERFACE ADAPTOR CIRCUIT 10
EXPLODED VIEW 12
MECHANICAL REPLACEMENT PARTS LIST 14
ELECTRICAL REPLACEMENT PARTS LIST 14

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

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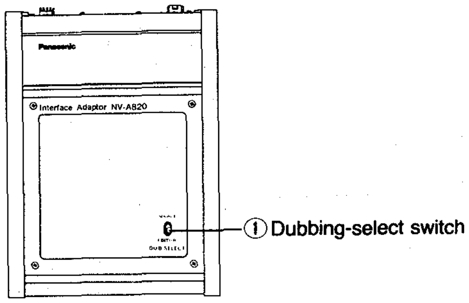
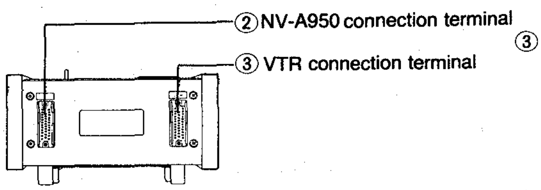
NV 8200

CONTROLS AND THEIR FUNCTIONS


Panasonic
Interface Adaptor NV-A820
DUB SELECT
① Dubbing-select switch

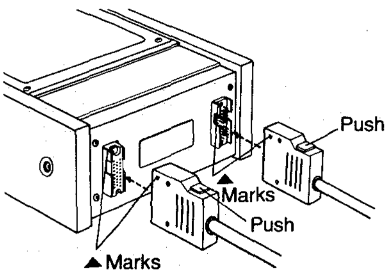
① Dubbing-select switch
[DUB SELECT]
Set to the "EDITOR" position if the connected video unit is to be used as a recorder, and to the "SOURCE" position if it is used as a player.

② NV-A950 connection terminal
[NV-A950]
Make connection between this terminal and the "EDITOR" terminal or "SOURCE" terminal of the editing controller (NV-A950).


② NV-A950 connection terminal
③ VTR connection terminal

③ VTR connection terminal [VTR]
Make connection between this terminal and the "REMOTE CONTROL" terminal of the connected video unit.

CONNECTION OF THE NV-A820


Push
▲Marks
Push
▲Marks

There is a ▲ on the connection terminals of the NV-8200, NV-8170, editing controller and interface adaptor, and on the included remote-control terminal.

Make connection and disconnection by pushing the button on the cable connector and aligning the ▲ marks.

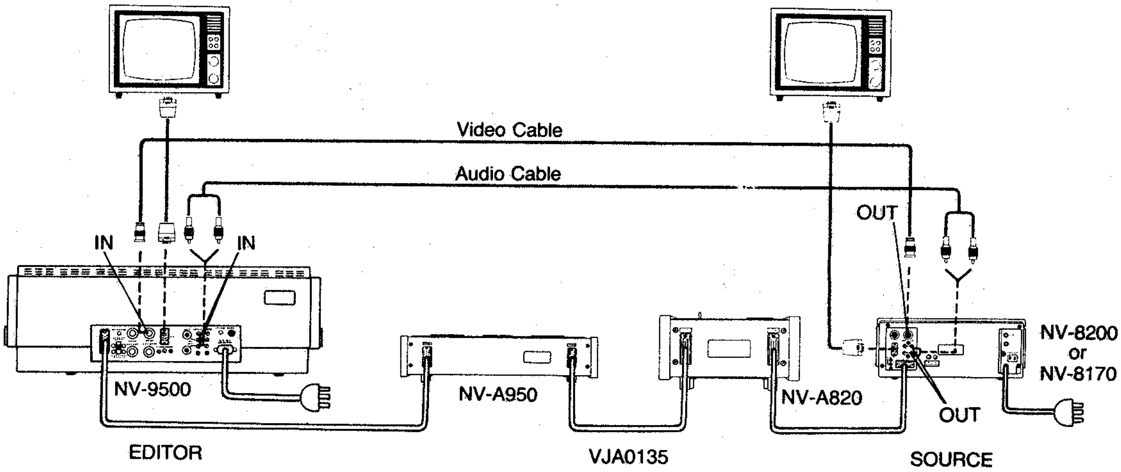
Note:
- Be sure that the power switches of the VCR's are turned off before making connections.

VTR:	To be connected to VHS recorder NV-8200/ playerNV-8170.
NV-A950:	To be connected with NV-A950.

(172)
NV 8200

VHS TO 3/4″ VCR EDITING

If you are not familiar with the operation of the NV-A950, please read the NV-9500/NV-A950 operating instructions.

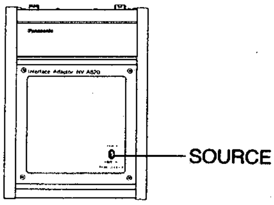

Video Cable
Audio Cable
IN
IN
OUT
OUT
NV-9500
NV-A950
NV-A820
NV-8200
or
NV-8170
EDITOR
VJA0135
SOURCE

Notes:

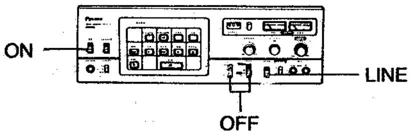
- Be sure that the power switches of the VCR's are turned off before making connections.
- Be sure that the timer switch and memory switch are OFF.
- The editor recorder should use NV-9500.

Switch Settings

NV-A820 with NV-8200/NV-8170 as Source/Player.



NV-A820



NV-8200/NV-8170

Note:

If the switches are in the wrong positions, proper editing may not be possible.

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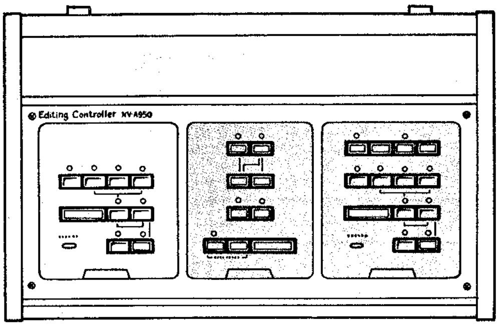
NV 8200

USING THE EDITING CONTROLLER NV-A950



NV-A950

Because the NV-A950 was originally designed for use with the NV-9500 3/4″ editing system, please read the following notes carefully.

Notes:

1) The controls shown in the shaded area operate in the same way as if two 3/4″ (9500) machines were being used.
   Insert and assembly edits, rehearsals, entry and exit are all functional.
2) The SOURCE controls operate according to the descriptions in the section "Operation of NV-A950 with the VHS NV-8200, NV-8170".

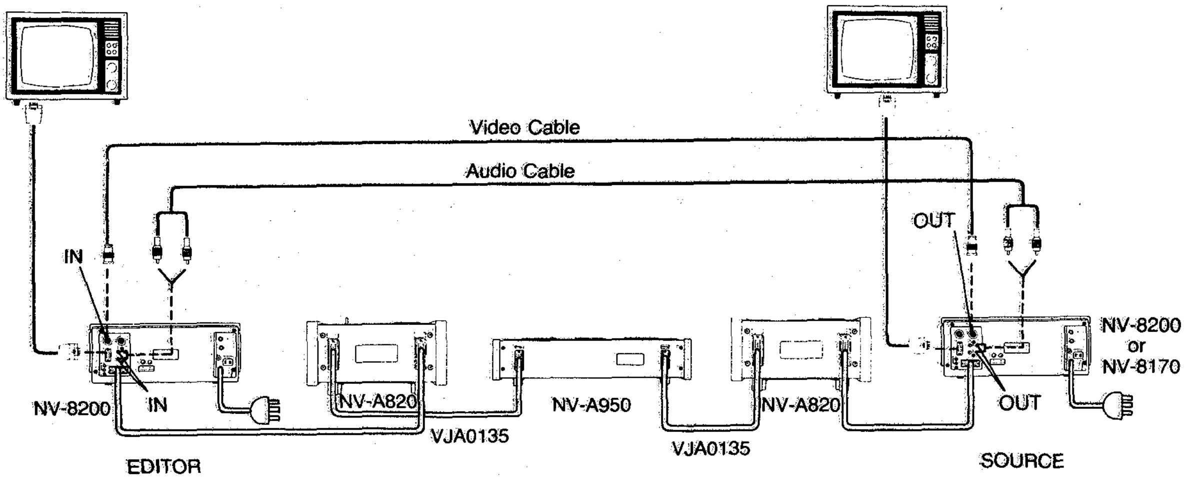
OPERATION

1) Place a video cassette in both machines.
2) Use FF, REW, PLAY (FWD) and SEARCH as necessary to find the desired editing points.
3) Press PAUSE at the edit point.
4) Use SLOW REW as necessary to change the edit point.
5) Press PREROLL and wait for the ready signal (PREROLL LED's flash).
6) Use REHEARSAL, ASSY, INSERT, ENTRY, and EXIT as necessary to achieve editing.

NV 8200 (174)

VHS TO VHS ASSEMBLY RECORDING

If you are not familiar with the operation of the NV-A950, please read the NV-9500/NV-A950 operating instructions.

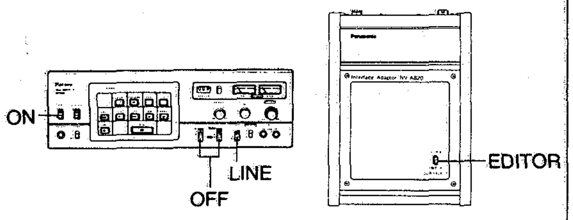

Video Cable
Audio Cable
IN
OUT
NV-8200
or
NV-8170
NV-8200
IN
NV-A820
NV-A950
NV-A820
OUT
VJA0135
VJA0135
EDITOR
SOURCE

Notes:

- Be sure that the power switches of the VCR's are turned off before making connections.
- Be sure that the timer switch and memory switch are OFF.

Switch Settings

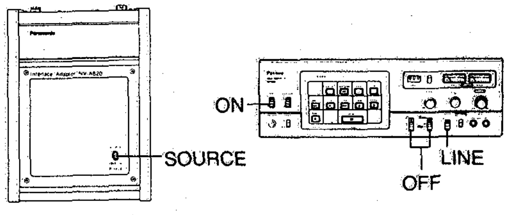
- NV-A820 with NV-8200 as Editor/Recorder.


ON
LINE
OFF
EDITOR

NV-8200 NV-A820

EDITOR

- NV-A820 with NV-8200/NV-8170 as Source/Player.


SOURCE
ON
LINE
OFF

NV-A820

NV-8200
or
NV-8170

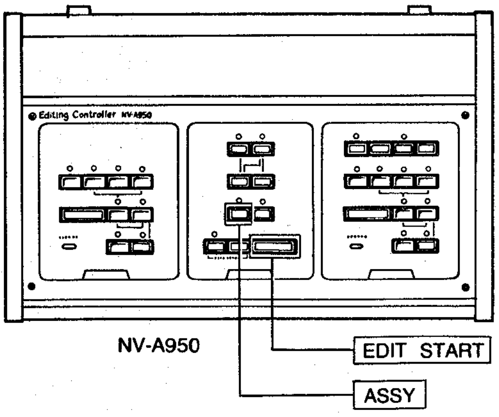
SOURCE

Note:

If the siwtches are in the wrong positions, proper editing may not be possible.

NV 8200
(175)

USING THE EDITING CONTROLLER NV-A950



Because the NV-A950 was originally designed for use with the NV-9500 3/4″ editing system, please read the following notes carefully.

Notes:

1) ASSY and EDIT START are the only CONTROL buttons which function in the same way as if two ¾″ (NV-9500) machines were used.
2) ENTRY, EXIT, RESET, INSERT, REHEARSAL IN, and RETURN do not function.
3) The SOURCE and EDITOR controls operate according to the descriptions in the section "Operation of NV-A950 with the VHS NV-8200, NV-8170".

OPERATION

1) Place a video cassette in both machines.
2) Use FF, REW, PLAY (FWD) and SEARCH as necessary to find the desired editing point.
3) Press PAUSE at the edit point.
4) Press PREROLL and wait for the ready signal (PREROLL LED's flash).
5) Press ASSY and EDIT START at the same time to perform editing.

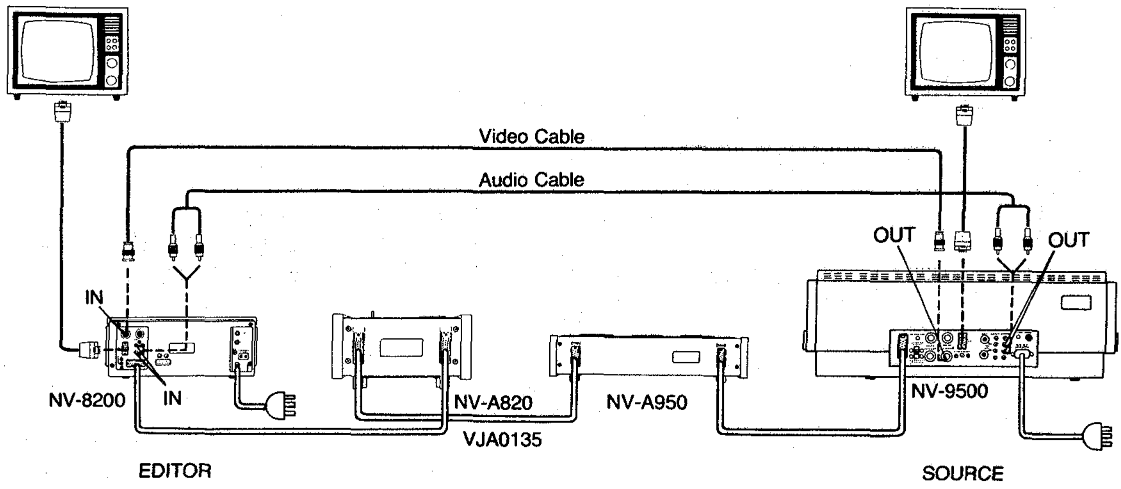
Notes:

1) When ASSY and EDIT START are pressed, the monitor connected to the editor (NV-8200) will immediately show the E-E picture (the signal from the SOURCE machine).
   However, the EDITOR will not begin recording until the selected edit point is reached (about 5 seconds after the buttons were pushed). This is normal.
2) REHEARSAL does not function.
3) Upon playback, a slight "color beat" will be noticeable at the edit point. This is normal.

NV 8200 (176)

3/4″ VCR TO VHS ASSEMBLY RECORDING

If you are not familiar with the operation of the NV-A950, please read the NV-9500/NV-A950 operating instructions.

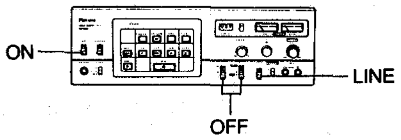

Video Cable
Audio Cable
OUT
OUT
IN
IN
NV-8200
NV-A820
VJA0135
NV-A950
NV-9500
EDITOR
SOURCE

Notes:

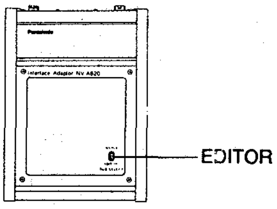
- Be sure that the power switches of the VCR's are turned off before making connections.
- Be sure that the timer switch and memory switch are OFF.

Switch Settings

NV-A820 with NV-8200 as Editor/Recorder.



NV-8200



NV-A820

Note:

If the switches are in the wrong positions, proper editing may not be possible.

NV 8200

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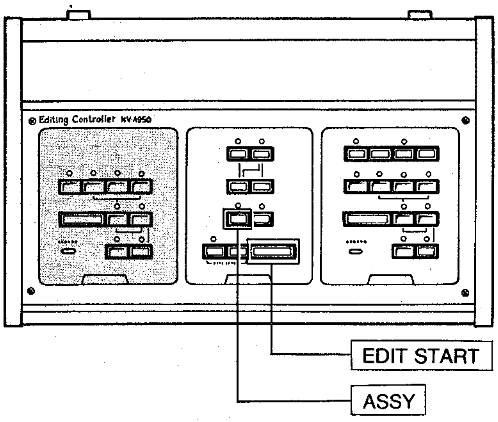
USING THE EDITING CONTROLLER NV-A950



Because the NV-A950 was originally designed for use with the NV-9500 3/4" editing system, please read the following notes carefully.

Notes:

1) The controls in the shaded area operate in the same manner as if ¾" machines were being used.
2) ASSY and EDIT START are the only CONTROL buttons which function in the same way as if two ¾" (9500) machines were used.
3) ENTRY, EXIT, RESET, INSERT, REHEARSAL IN, and RETURN do not function.
4) The EDITOR controls operate according to the descriptions in the section "Operation of NV-A950 with the VHS NV-8200, NV-8170".
   See page 17.

OPERATION

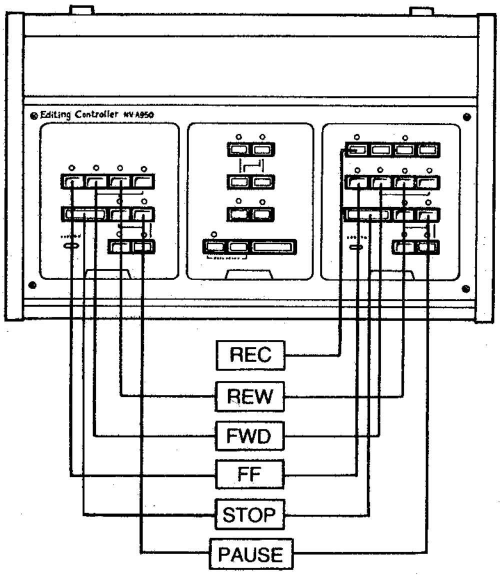
1) Place a video cassette in both machines.
2) Use FF, REW, PLAY (FWD), and SEARCH as necessary to find the desired editing point.
3) Press PAUSE at the edit point.
4) Press PREROLL and wait for the ready signal (PREROLL LED's flash).
5) Press ASSY and EDIT START at the same time perform editing.

Notes:

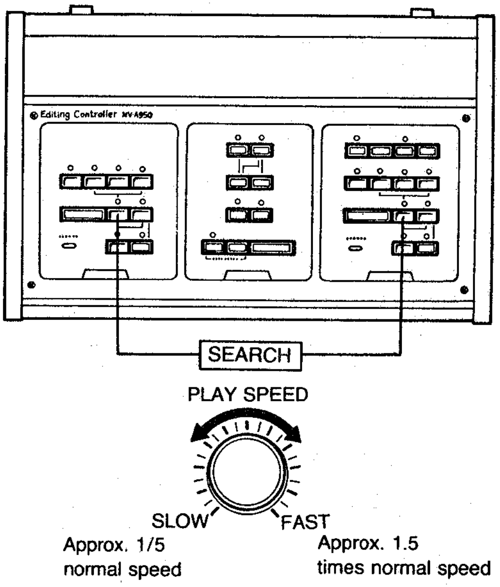
1) When ASSY and EDIT START are pressed, the monitor connected to the editor (NV-8200) will immediately show the E-E picture (the signal from the SOURCE machine).
   However, the EDITOR will not begin recording until the selected edit point is reached (about 5 seconds after the buttons were pushed). This is normal.
2) REHEARSAL does not function.
3) Upon playback, a slight "color beat" will be noticeable at the edit point. This is normal.

NV 8200 (178)

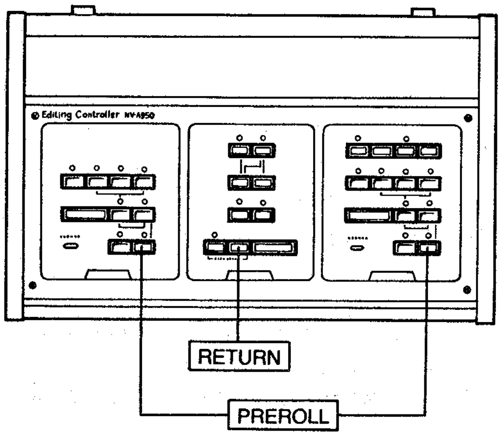
OPERATION OF THE NV-A950 WITH THE VHS NV-8200, NV-8170


Editing Controller NV-A950
REC
REW
FWD
FF
STOP
PAUSE

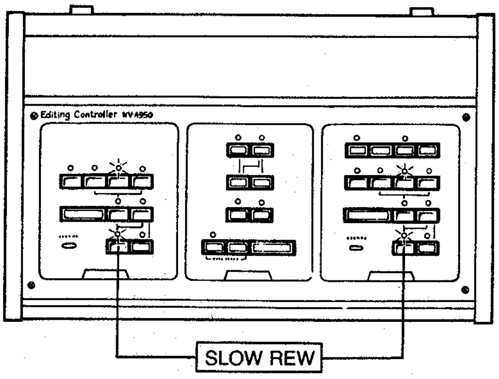
- These controls operate in the exact same way as the front panel buttons on the VHS decks.


Editing Controller NV-A950
SEARCH
PLAY SPEED
SLOW
FAST
Approx. 1/5
normal speed
Approx. 1.5
times normal speed

- The speed of tape SEARCH is determined by the PLAY SPEED control on the VHS deck (NV-8200 or NV-8170).


Editing Controller NV-A950
RETURN
PREROLL

- These controls operate in the same manner as if NV-9500 was being used with the NV-A950.


Editing Controller NV-A950
SLOW REW

- When SLOW REW is used by the VHS deck, a rewind picture IS NOT produced.
- Tape is retracted from the video heads for rewind in VHS decks. Both the SLOW REW and REW LED's light up.
- Slow rewind speed is about ⅓ normal rewind speed.
- As is done for ¾" machines, SLOW REW must be held down for the desired amount of rewind action.
- Even when SLOW REW is used by the VHS deck, its function cannot be operated the same way as the NV-9500.

NV8200

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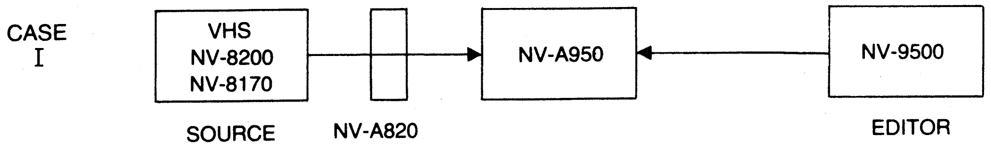
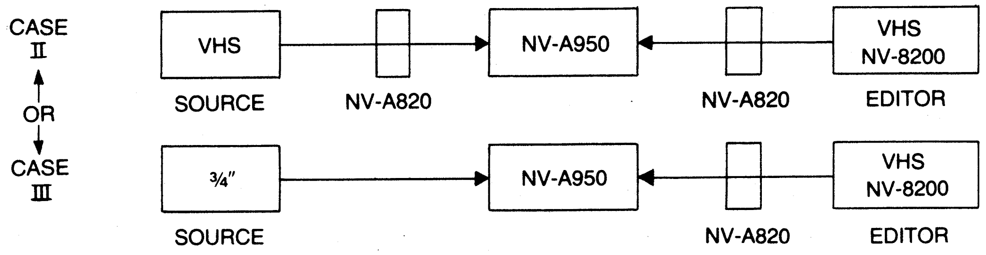
POINTS TO REMEMBER


CASE
I
VHS
NV-8200
NV-8170
SOURCE
NV-A820
NV-A950
NV-9500
EDITOR

Note:

- All editing features are possible.


CASE
II
OR
CASE
III
VHS
SOURCE
NV-A820
NV-A950
NV-A820
VHS
NV-8200
EDITOR
¾″
SOURCE
NV-A950
NV-A820
VHS
NV-8200
EDITOR

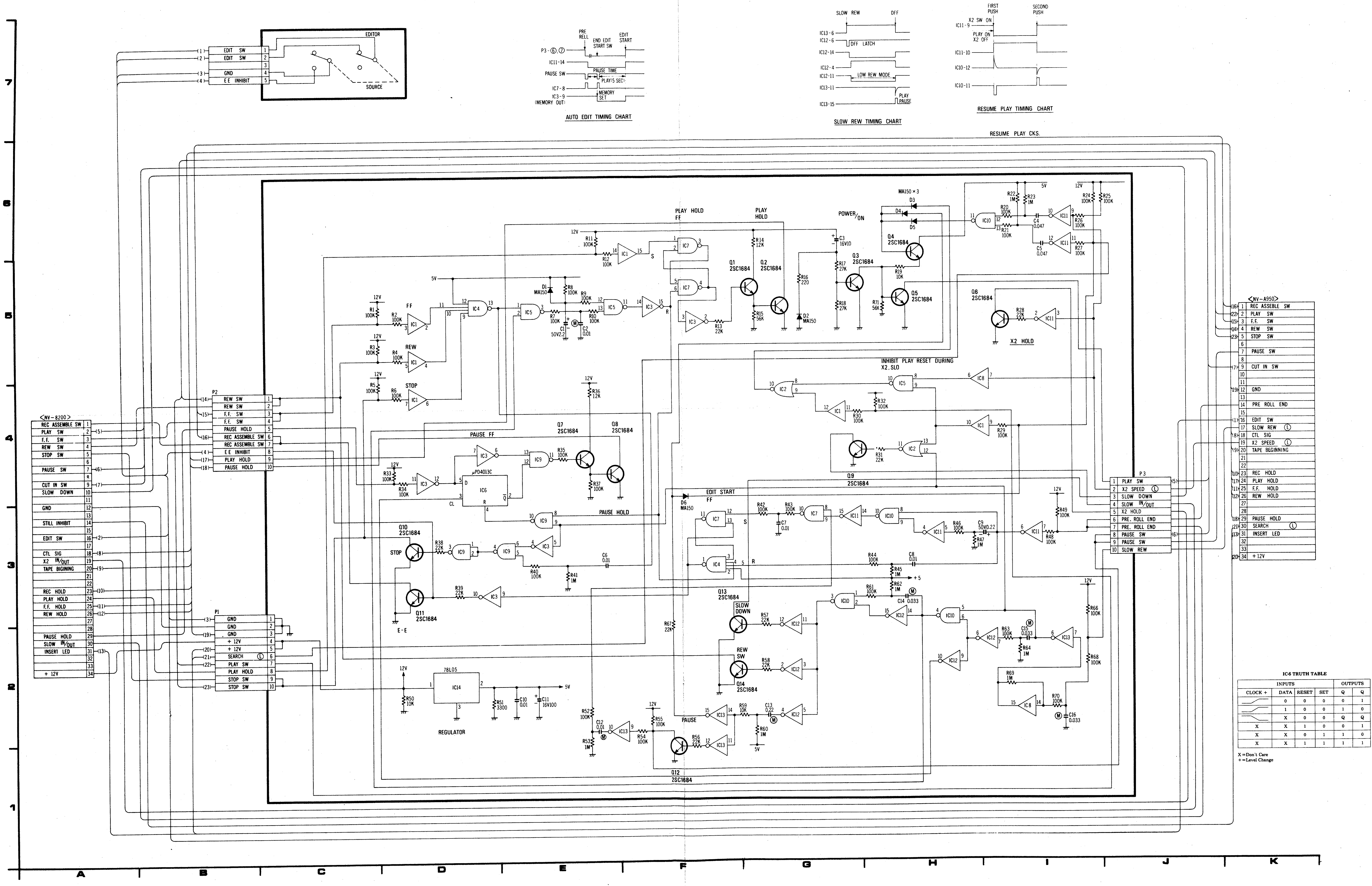
Notes:

- Only assemble edits are possible.
- Rehearsal feature is inoperative.
- As soon as the edit buttons are pushed, the editor monitors shows the recording E-E picture—however, actual recording will begin at the proper edit point.
- A slight "color beat" will be noticeable upon playback of the edit point.

MEMO

NV 8200 (180)

INTERFACE ADAPTOR SCHEMATIC DIAGRAM


EDITOR
EDIT SW
EDIT SW
GND
E E INHIBIT
SOURCE
AUTO EDIT TIMING CHART
P3-⑥,⑦
IC11-14
PAUSE SW
IC7-8
IC3-9 (MEMORY OUT)
PRE RELL
END EDIT START SW
EDIT START
PAUSE TIME
PLAY(5 SEC)
MEMORY SET
SLOW REW TIMING CHART
SLOW REW
OFF
IC13-6
IC12-6
OFF LATCH
IC12-14
IC12-4
IC12-11
LOW REW MODE
IC13-11
IC13-15
PLAY
PAUSE
RESUME PLAY TIMING CHART
FIRST PUSH
SECOND PUSH
X2 SW ON
IC11-9
PLAY ON
X2 OFF
IC11-10
IC10-12
IC10-11
RESUME PLAY CKS.
<NV-8200>
REC ASSEMBLE SW
PLAY SW
F.F. SW
REW SW
STOP SW
PAUSE SW
CUT IN SW
SLOW DOWN
GND
STILL INHIBIT
EDIT SW
CTL SIG
X2 IN/OUT
TAPE BIGINING
REC HOLD
PLAY HOLD
F.F. HOLD
REW HOLD
PAUSE HOLD
SLOW IN/OUT
INSERT LED
+ 12V
P2
REW SW
REW SW
F.F. SW
F.F. SW
PAUSE HOLD
REC ASSEMBLE SW
REC ASSEMBLE SW
E E INHIBIT
PLAY HOLD
PAUSE HOLD
P1
GND
GND
GND
+ 12V
+ 12V
SEARCH
PLAY SW
PLAY HOLD
STOP SW
STOP SW
<NV-A950>
REC ASSEBLE SW
PLAY SW
F.F. SW
REW SW
STOP SW
PAUSE SW
CUT IN SW
GND
PRE ROLL END
EDIT SW
SLOW REW
CTL SIG
X2 SPEED
TAPE BEGINNING
REC HOLD
PLAY HOLD
F.F. HOLD
REW HOLD
PAUSE HOLD
SEARCH
INSERT LED
+ 12V
P3
PLAY SW
X2 SPEED
SLOW DOWN
SLOW IN/OUT
X2 HOLD
PRE. ROLL END
PRE. ROLL END
PAUSE SW
PAUSE SW
SLOW REW
PLAY HOLD FF
PLAY HOLD
POWER/ON
MA150 × 3
FF
REW
STOP
PAUSE FF
μPD4013C
IC6
PAUSE HOLD
Q1 2SC1684
Q2 2SC1684
Q3 2SC1684
Q4 2SC1684
Q5 2SC1684
Q6 2SC1684
X2 HOLD
INHIBIT PLAY RESET DURING X2, SLO
Q7 2SC1684
Q8 2SC1684
Q9 2SC1684
EDIT START FF
Q10 2SC1684
Q11 2SC1684
E-E
Q13 2SC1684
SLOW DOWN
REW SW
Q14 2SC1684
PAUSE
Q12 2SC1684
78L05
IC14
REGULATOR
12V
5V
A
B
C
D
E
F
G
H
I
J
K
1
2
3
4
5
6
7

IC6 TRUTH TABLE

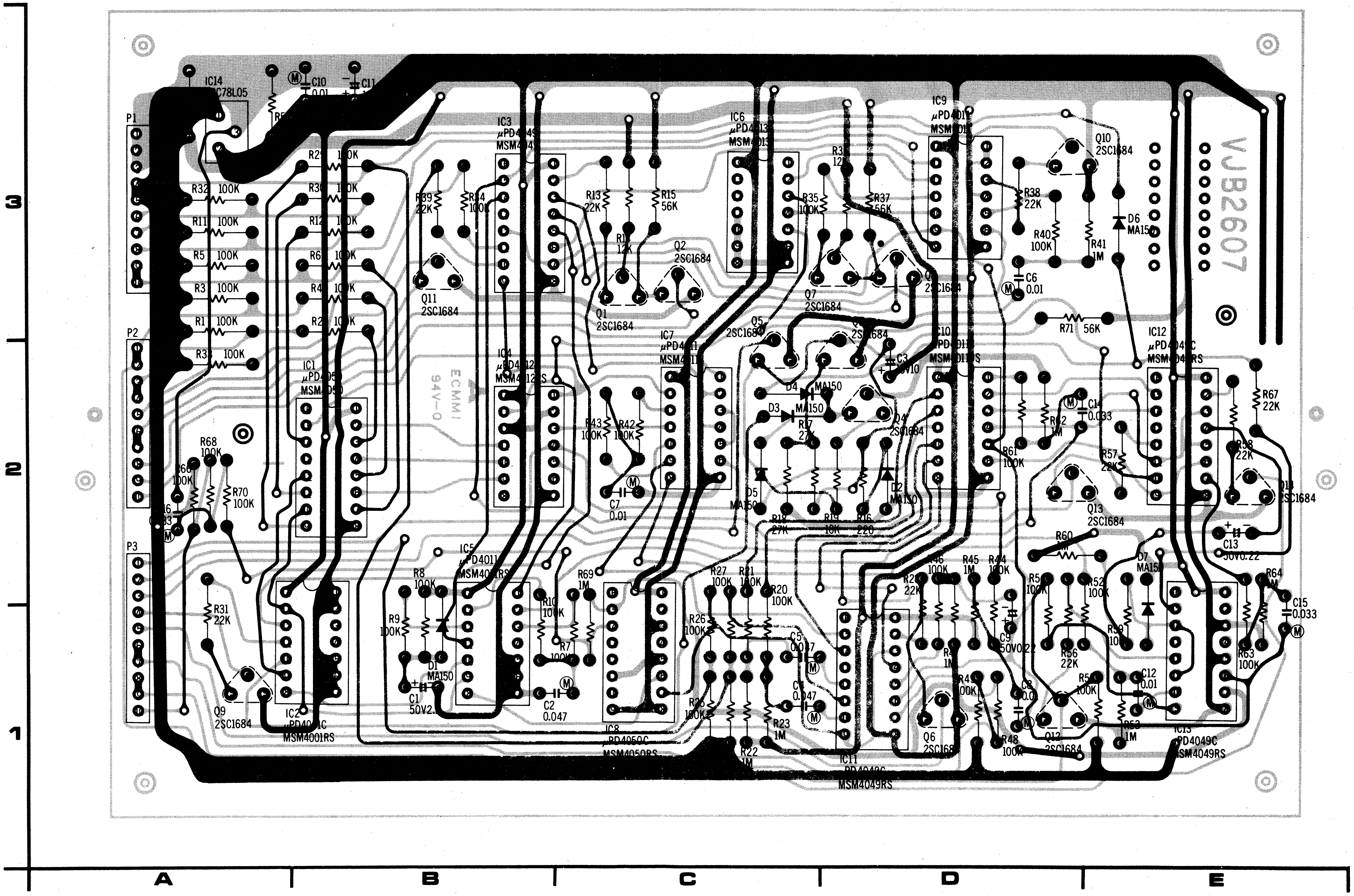
INPUTS				OUTPUTS		
CLOCK +	DATA	RESET	SET	Q	Q	
↑	0	0	0	0	1	
↑	1	0	0	1	0	
↓	X	0	0	Q	Q	No Change
X	X	1	0	0	1	
X	X	0	1	1	0	
X	X	1	1	1	1	

X = Don't Care
+ = Level Change

INTERFACE ADAPTOR CIRCUIT BOARD

(181) N 8200

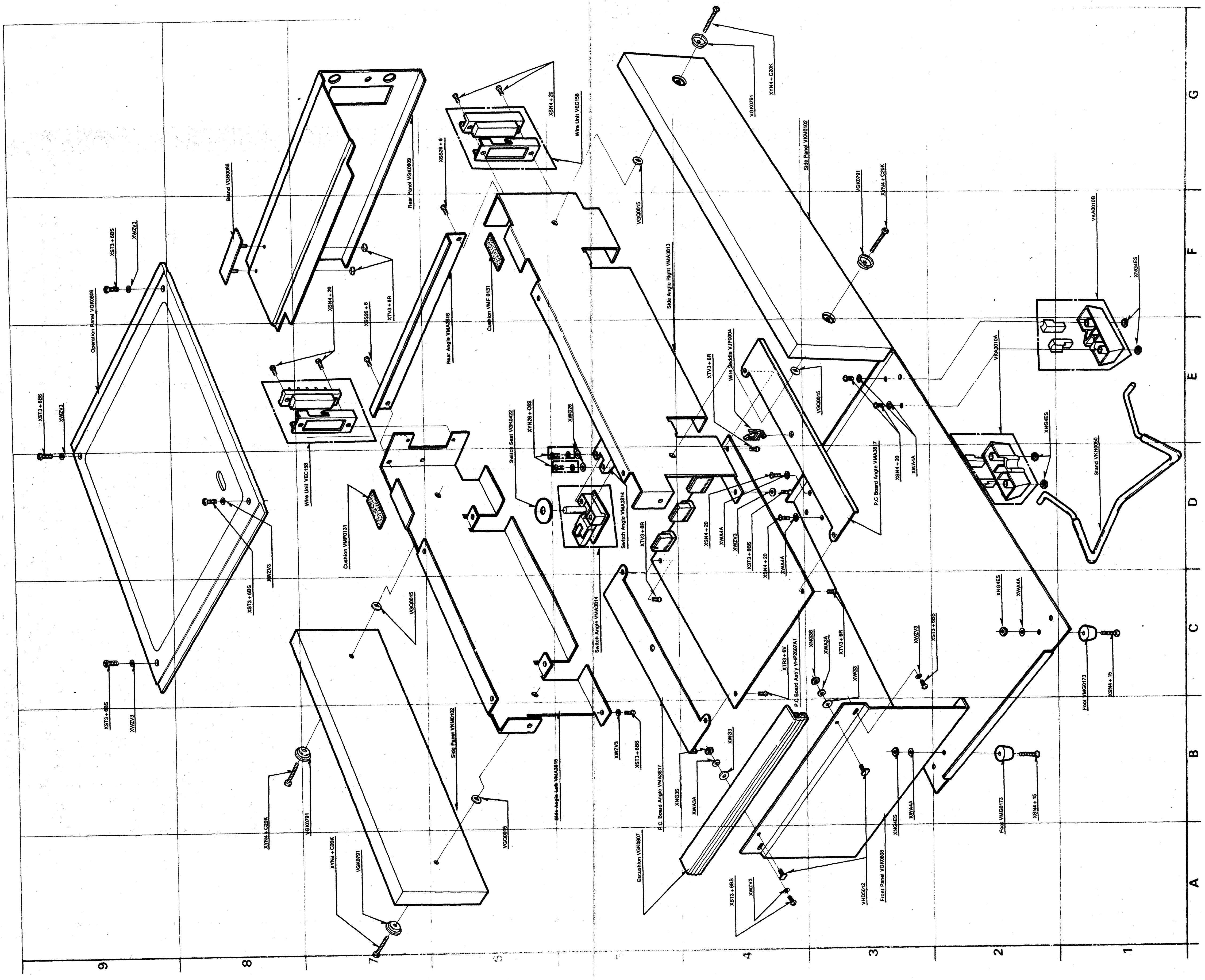
INTER FACE ADAPTOR	
TR1	C-3
TR2	C-3
TR3	D-2
TR4	D-2
TR5	C-2
TR6	D-1
TR7	D-3
TR8	D-3
TR9	A-1
TR10	D-3
TR11	B-3
TR12	D-1
TR13	D-2
IC1	B-2
IC2	B-1
IC3	B-3
IC4	B-2
IC5	B-1
IC6	C-3
IC7	C-2
IC8	C-1
IC9	D-3
IC10	D-2
IC11	D-1
IC12	E-2
IC13	E-1
IC14	A-3



3
2
1
A
B
C
D
E
VJB2607
ECMMI 94V-0
P1
P2
P3
IC14 C78L05
C10 0.01
C11
R32 100K
R11 100K
R5 100K
R3 100K
R1 100K
R33 100K
R29 100K
R30 100K
R12 100K
R6 100K
R4 100K
R2 100K
IC1 μPD4050 MSM4050
R68 100K
R66 100K
R70 100K
C16 0.033
R31 22K
Q9 2SC1684
IC2 μPD4001C MSM4001RS
IC3 μPD4049 MSM4049
R39 22K
R14 100K
Q11 2SC1684
IC4 μPD4012 MSM4012RS
IC5 μPD4011 MSM4011RS
R8 100K
R9 100K
D1 MA150
C1 50V2.2
R10 100K
R7 100K
C2 0.047
R69 1M
R13 22K
R15 56K
R16 12K
Q1 2SC1684
Q2 2SC1684
R43 100K
R42 100K
C7 0.01
IC7 μPD4011 MSM4011
IC8 μPD4050C MSM4050RS
IC6 μPD4013 MSM4013
R35 100K
R36 12K
R37 56K
Q7 2SC1684
Q8 2SC1684
Q5 2SC1684
Q3 2SC1684
C3 50V10
D4 MA150
D3 MA150
R17 27K
Q4 2SC1684
D5 MA150
D2 MA150
R18 27K
R19 10K
R16 220
R27 100K
R21 100K
R20 100K
R26 100K
C5 0.047
C4 0.047
R25 100K
R23 1M
R22 1M
IC11 μPD4049C MSM4049RS
IC9 μPD4013 MSM4013
IC10 μPD4013 MSM4013RS
R38 22K
R40 100K
R41 1M
C6 0.01
Q10 2SC1684
D6 MA150
R71 56K
C14 0.033
R62 1M
R61 100K
R24 22K
R46 100K
R45 1M
R44 100K
R47 1M
C9 50V0.22
R49 100K
C8 0.01
Q6 2SC1684
R48 100K
Q13 2SC1684
R60
R57 22K
R58 22K
R67 22K
IC12 μPD4049C MSM4049RS
Q14 2SC1684
C13 50V0.22
D7 MA150
R55 100K
R52 100K
R59 10K
R56 22K
R54 100K
C12 0.01
R53 1M
Q12 2SC1684
R64 1M
C15 0.033
R63 100K
IC13 μPD4049C MSM4049RS

NV 8200 (182)

EXPLODED VIEW


Operation Panel VGK0805
XST3+6BS
XWZV3
Bead VGB0088
Rear Panel VGK0809
XSN4+20
XSS26+6
XTV3+6R
Rear Angle VMA3816
Cushion VMF0131
Wire Unit VEC158
Switch Seat VGK0422
XYN26+C6S
XWG26
Switch Angle VMA3814
Side Angle Right VMA3813
Side Angle Left VMA3815
VGQ0015
Side Panel VKM0102
VGK0791
XYN4+C20K
VKA0010B
VKA0010A
XNG4ES
Stand VKH0050
Wire Saddle VJF0004
P.C Board Angle VMA3817
XWA4A
P.C Board Ass'y VHP2807A1
XTR3+6V
XNG3S
XWA3A
XWG3
Foot VMG0173
XSN4+15
Excushion VGK0807
Front Panel VGK0808
VHD5012
A
B
C
D
E
F
G
1
2
3
4
5
6
7
8
9

NV 8200
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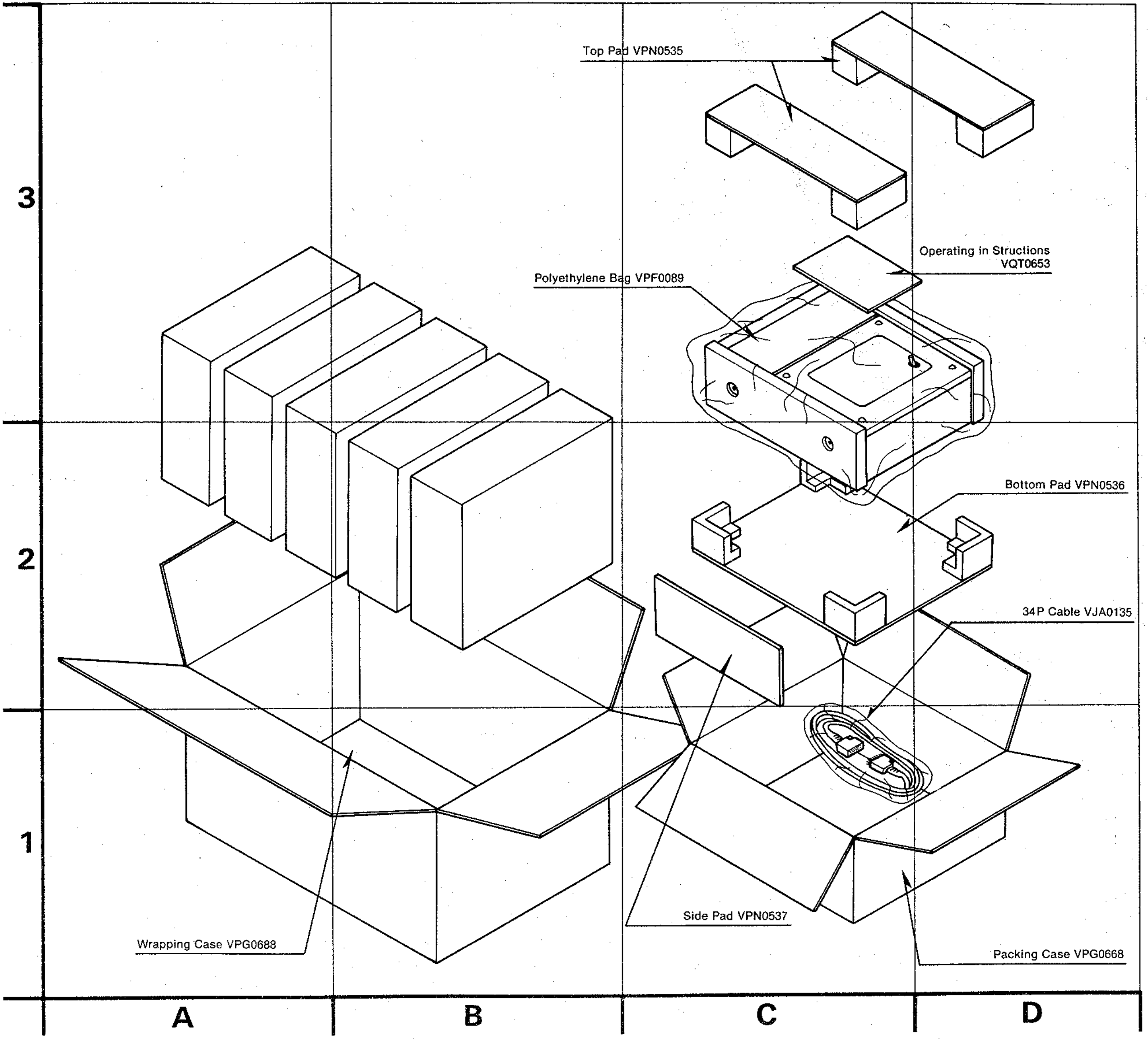
Top Pad VPN0535
Operating in Structions VQT0653
Polyethylene Bag VPF0089
Bottom Pad VPN0536
34P Cable VJA0135
Side Pad VPN0537
Packing Case VPG0668
Wrapping Case VPG0688
3
2
1
A
B
C
D

(184) NV 8200

MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-A820

Notes:
1. The column of Ref. No. indicates the located position of the part. Refer to exploded view and see the cross section of the horizontal column (1—up) and the vertical column (A—up).

Ref. No.		*Part No.*	Part Name & Description	Pcs / Set	Remarks
			NV-A820		
(7-D)		VEC158	Wire Unit	2	
(8-G)		VGB0088	Brand	1	
(3-G)(7-A)		VGK0791		4	
(6-G)		VGK0422	Switch Seat	1	
(9-F)		VGK0806	Operation Panel	1	
(5-A)		VGK0807	Escushion	1	
(3-A)		VGK0808	Front Panel	1	
(7-G)		VGK0809	Rear Panel	1	
(3-E)		VGQ0015		4	
(3-A)		VHD5012		1	
(4-C)		VHP2607A1	P.C Board Ass'y	1	
(4-E)		VJF0004	Wire Saddle	1	
(2-E)		VKA0010A		1	
(1-F)		VKA0010B		1	
(1-D)		VKH0050	Stand	1	
(3-G)		VKM0102	Side Panel	2	
(5-F)		VMA3813	Side Angle Right	1	
(5-C)		VMA3814	Switch Angle	1	
(6-B)		VMA3815	Side Angle Left	1	
(6-E)		VMA3816	Rear Angle	1	
(3-D)		VMA3817	P.C Board Angle	1	
(6-F)		VMF0131	Cushion	2	
(2-B)		VMG0173	Foot	2	
(2-D)		VJA0135	34P Cable	1	
(3-B)		VPF0089	Polyethylene Bag	1	
(3-C)		VPN0535	Top Pad	1	
(1-A)		VPG0688	Wrapping Case	1	
(1-D)		VPG0668	Packing Case	1	
(2-D)		VPN0536	Bottom Pad	1	
(1-C)		VPN0537	Side Pad	1	
(3-D)		VQT0653	Operating Instructions	1	
			SCREW		
		XNG3A		3	
		XNG3S		2	
		XNG4A		1	
		XNG4ES		6	
		XSN4+15		2	
		XSN4+20		4	
		XST3+6BS		6	
		XTV3+6R		2	
		XYN4+C20K		4	
			WASHER		
		XWA		6	
		XWA4A		6	
		XWG3		1	
		XWG26		2	
		XWZ		1	
		XWZV3		5	

ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-A820

Note:
1. Be sure to make your orders of replacement parts according to this list.
2. IMPORTANT SAFETY NOTICE
   Components identified by shade have special characteristics important for safety. When replacing any of components, use only the original ones.
3. Unless otherwise specified;
   All resistors are in OHMS (Ω), 1/4 w, ±5% carbon, K=1,000Ω, M=1,000KΩ.
   All capacitors are in MICROFARADS (μF), ±10%, P=μμF.
   All coils are in MICROHENRIES (μF), m=10³μ.
4. C.B.A: Circuit Board Assembly.
5. C.B: Circuit Board.

Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
			NV-A820		
			Interface Adaptor		
			Integrated Circuits		
IC1		μPD4050C		1	
		or (MSM4050RS)			
IC2		μPD4001C		1	
		or (MSM4001RS)			
IC3		μPD4049C		1	
		or (MSM4049RS)			
IC4		μPD4012C		1	
		or (MSM4012RS)			
IC5		μPD4011C		1	
		or (MSM4011RS)			
IC6		μPD4013C		1	
		or (MSM4013RS)			
IC7		μPD4011C		1	
		or (MSM4011RS)			
IC8		μPD4050C		1	
		or (MSM4050RS)			
IC9,10		μPD4011C		2	
		or (MSM4011RS)			
IC11,12,13		μPD4049C		3	
		or (MSM4049RS)			
IC14		μPC78L05		1	
			Transistors		
Q1-Q14		2SC1684		14	
			Diodes		
D1-D7		MA150		7	
			Resistors		
R1-R12		ERD25TJ104	100K	12	
R13		ERD25TJ223	22K	1	
R14		ERD25TJ123	12K	1	
R15		ERD25TJ563	56K	1	
R16		ERD25TJ221	220	1	
R17,18		ERD25TJ273	27K	2	
R19		ERD25TJ103	10K	1	
R20,21		ERD25TJ104	100K	2	
R22,23		ERD25TJ105	1M	2	
R24-R27		ERD25TJ104	100K	4	
R28		ERD25TJ223	22K	1	
R29,30		ERD25TJ104	100K	2	
R31		ERD25TJ223	22K	1	
R32-R35		ERD25TJ104	100K	4	
R36		ERD25TJ123	12K	1	
R37		ERD25TJ563	56K	1	
R38,39		ERD25TJ223	22K	2	
R40		ERD25TJ104	100K	1	
R41		ERD25TJ105	1M	1	
R42-R44		ERD25TJ104	100K	3	
R45		ERD25TJ105	1M	1	
R46		ERD25TJ104	100K	1	
R47		ERD25TJ105	1M	1	
R48,49		ERD25TJ104	100K	2	
R50		ERD25TJ103	10K	1	

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Ref. No.		Part No.	Part Name & Description	Pcs / Set	Remarks
R51		ERD25TJ332	3.3K	1	
R52		ERD25TJ104	100K	1	
R53		ERD25TJ105	1M	1	
R54,55		ERD25TJ104	100K	2	
R56-R58		ERD25TJ223	22K	3	
R59		ERD25TJ103	10K	1	
R60		ERD25TJ105	1M	1	
R61		ERD25TJ104	100K	1	
R62		ERD25TJ105	1M	1	
R63		ERD25TJ104	100K	1	
R64		ERD25TJ105	1M	1	
R66		ERD25TJ104	100K	1	
R67		ERD25TJ223	22K	1	
R68		ERD25TJ104	100K	1	
R69		ERD25TJ105	1M	1	
R70		ERD25TJ104	100K	1	
R71		ERD25TJ563	56K	1	
			Capacitors		
C1		ECEA50Z2R2E	Electrolytic 50V 2.2	1	
C2		ECQM1H473KZW	Myler 50V 0.047	1	
C3		ECEA1CS100E	Electrolytic 16V 100	1	
C4,C5		ECQM1H473KZW	Myler 50V 0.047	2	
C6-C8		ECQM1H103KZW	Myler 50V 0.01	3	
C9		ECEA50ZR22E	Electrolytic 50V 0.22	1	
C10		ECQM1H103KZW	Myler 50V 0.01	1	
C11		ECEA1CS101E	Electrolytic 16V 100	1	
C12		ECQM1H103KZW	Myler 50V 0.01	1	
C13		ECEA50ZR22E	Electrolytic 50V 0.22	1	
C14-16		ECQM1H333KZW	Myler 50V 0.033	3	
			Connectors		
P1-P3		VJP0091	10 Pin	3	